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ABSENCE OF TONSILS AS A FACTOR IN THE DEVELOPMENT OF BULBAR POLIOMYELITIS

Gaylord W. Anderson, M.D.
and
Jeanne L. Rondeau, A.B., Minneapolis

Foremost among the many unknowns in the pathogenesis of poliomyelitis are the factors that determine the type of response to the infection. There is ample evidence that infection with the poliomyelitis viruses is widespread, ultimately involving almost all persons, except those in isolated areas. In most of these persons, the infection is mild, producing no paralysis and usually occuring without recognizable symptoms. Yet a small number of persons respond badly to the virus invasion, with resultant paralysis. Of those with central nervous system involvement, a few show involvement of the vital medullary centers, while the majority show lesions of the spinal cord. The proportion with bulbar paralysis has supposedly increased in recent years and is greater in the older age groups. Very little evidence is currently available, however, as to the factors that determine this localization of the paralysis in the bulbar area.

Among the many factors that have been suggested is that of recent tonsillectomy. Many investigators have advanced definite evidence that a bulbar type of response is more likely to develop in persons who have undergone tonsillectomy during the month prior to onset of poliomyelitis.[1] There is also good evidence that the risk that clinically recognizable poliomyelitis will develop is greater in such children than in those not having undergone tonsillectomy.[2] While a few persons have challenged such conclusions,[3] the evidence of relationship to recent tonsillectomy seems conclusive. Most physicians avoid elective tonsillectomies during a poliomyelitis outbreak.

The usual interpretation placed on such data has been that the virus is probably in the throat at the time of the operation and that it passes directly into the central nervous system along the nerve fibers that are cut during the operation. Direct invasion along severed motor nerves is assumed to be the factor that determines the high degree of bulbar localization in these cases. By way of contrast, the intestinal tract is frequently assumed to be the portal of invasion of other cases.

The recent demonstration of viremia in the early stages of the disease in monkeys infected through feeding of virus has prompted Bodian [4] to advance the hypothesis of viremia resulting from gastrointestinal absorption with subsequent localization of virus in the central nervous system by escape through capillary areas of special permeability. According to this concept, the usual bulbar form develops in the person whose capillaries of the meddullary area are more permeable than those of the spinal area. This concept of differential permeability of the central nervous system capillaries is, in essence, a return to Draper's hypothesis of variation in the permeability of the "blood-brain barrier" as the essential factor in determining central nervous system involvement and localization.

In 1941, Top and Vaughan [5] reported, however, that a preliminary review of 521 cases of poliomyelitis in Detroit in 1939 showed that 27% of 215 patients who had had tonsillectomy at some time in their life had a bulbar involvement in contrast with only 4.2% of 306

From the School of Public Health, University of Minnesota.
This study was aided by a grant from the National Foundation for Infantile Paralysis.

1. (*a*) Ayer, W. D.: Poliomyelitis, Proc. Internat Assemb. Inter-State Post-Grad. M. A. North America (1928), pp. 319-328, 1929. (*b*) Aycock, W. L., and Luther, E. H.: The Occurrence of Poliomyelitis Following Tonsillectomy, New England J. Med. **200**: 164-167 (Jan. 24) 1929. (*c*) Eley, R. C., and Flake, C. G.: Acute Anterior Poliomyelitis Following Tonsillectomy and Adenoidectomy, with Special Reference to the Bulbar Form, J. Pediat. **13**: 63-70 (July) 1938. (*d*) Fischer, A. E.; Stillerman, M., and Marks, H. H.: Relation of Tonsillectomy and of Adenoidectomy to the Incidence of Poliomyelitis, with Special Reference to Bulbar Form, Am. J. Dis. Child. **61**: 305-321 (Feb.) 1941. (*e*) Aycock, W. L.: Tonsillectomy and Poliomyelitis: I. Epidemiologic Considerations, Medicine **21**: 65-94 (Feb.) 1942. (*f*) Lucchesi, P. F., and LaBoccetta, A. C.: Relationship of Tonsils and Adenoids to Type of Poliomyelitis: Analysis of 432 Cases, Am. J. Dis. Child. **68**: 1-4 (July) 1944. (*g*) Anderson, J. A.: Poliomyelitis and Recent Tonsillectomy, J. Pediat. **27**: 68-70 (July) 1945. (*h*) Anderson, G. W.; Anderson, G.; Skaar, A. E., and Sandler, F.: The Risk of Poliomyelitis After Tonsillectomy, Ann. Otol. Rhin. & Laryng. **59**: 602-613 (Sept.) 1950.

2. Footnotes 1*d*, *g*, and *h*.

3. Cunning, D. S.: Tonsillectomy and Poliomyelitis, Arch. Otolaryng. **46**: 575-583 (Nov.) 1947; Tonsillectomy-Poliomyelitis Survey—1947, Laryngoscope **58**: 503-513 (June) 1948; and Poliomyelitis-Tonsillectomy Survey—1948, ibid. **59**: 441-453 (May) 1949. Kinney, C. E.: Tonsillectomy and Poliomyelitis in Cuyahoga County, Ohio, Ohio State M. J. **44**: 1215-1216 (Dec.) 1948.

4. Bodian, D.: A Reconsideration of the Pathogenesis of Poliomyelitis, Am. J. Hyg. **55**: 414-438 (May) 1952; Pathogenesis of Poliomyelitis, Am. J. Pub. Health. **42**: 1388-1402 (Nov.) 1952.

5. Top, F. H., and Vaughan, H. F.: Epidemiology of Poliomyelitis in Detroit in 1939, Am. J. Pub. Health **31**: 777-790 (Aug.) 1941.

persons whose tonsils were in situ at the time of the attack. A final and more comprehensive report on a 10 year experience with patients treated at the Herman Kiefer Hospital in Detroit [6] showed that 85.1% of those with bulbar and 68.7% of those with spinobulbar cases had had tonsillectomy whereas only 43.1% with the spinal, 45.6% with the nonparalytic, and 44.4% with the encephalitic form had had their tonsils removed. These cases differed from those reported by other investigators in that they did not involve recent tonsillectomy, but rather removal at any time prior to onset of poliomyelitis. In other words, the presence or absence of tonsils at the time of attack by the poliomyelitis virus appeared to be one of the factors determining the type of response to the virus invasion. Lucchesi and LaBoccetta [1f] in 1944 had come to a similar conclusion after finding that 14% of 164 patients who had had tonsillectomy had bulbar involvement and 17% had bulbospinal involvement as contrasted with only 3% with bulbar and 7% with bulbospinal cases in 263 patients who had not had tonsillectomy. Unfortunately this report received scant attention and its significance was overlooked. More recently, Southcott [7] in a detailed study of 40 cases of bulbar poliomyelitis in South Australia in 1947-1948 found comparable results. The study reported here is an attempt to confirm the observations of Top and to explore some of the causative factors.

TABLE 1.—*Data on Patients with Poliomyelitis Who Gave History of Tonsillectomy by Type of Infection and by Age (Minnesota, 1946)*

	Bulbar			Severe Spinal			Mild Spinal			Nonparalytic			Total		
Age, Yr.	No. of Patients	No. of Patients Who Had Tonsillectomy	% of Patients with Tonsillectomy	No. of Patients	No. of Patients Who Had Tonsillectomy	% of Patients with Tonsillectomy	No. of Patients	No. of Patients Who Had Tonsillectomy	% of Patients with Tonsillectomy	No. of Patients	No. of Patients Who Had Tonsillectomy	% of Patients with Tonsillectomy	No. of Patients	No. of Patients Who Had Tonsillectomy	% of Patients with Tonsillectomy
0-4	80	21	26.2	348	26	7.5	273	27	9.9	74	7	9.5	775	81	10.5
5-9	169	139	82.2	215	67	31.2	256	79	30.9	104	37	35.6	744	322	43.3
10-14	115	99	86.1	135	58	43.0	161	85	52.8	50	26	52.0	461	268	58.1
15-19	55	38	69.1	97	50	51.5	89	40	44.9	28	13	46.4	269	141	52.4
20-over	116	85	73.3	141	63	44.7	129	65	50.4	34	18	52.9	420	231	55.0
Total	535	382	71.4	936	264	28.2	908	296	32.6	290	101	34.8	2,669	1,043	39.1

PLAN OF STUDY

The present study is based on epidemiological histories gathered during the 1946 outbreak in Minnesota when 2,881 cases of poliomyelitis were officially reported. During this outbreak 2,708 histories were obtained, but 39 were discarded in this study because of incomplete data as to tonsillectomy or type of infection. Eleven of these histories had inadequate data as to tonsillectomy, 25 had inadequate data to permit classification as to type of involvement, and 3 were inadequate in both respects. Of the 11 cases with deficient tonsillectomy data, 3 were of the bulbar form, 3 severe spinal, 3 mild spinal, and 2 nonparalytic. Of the 25 cases that could not be classified as to type, 10 patients had had a tonsillectomy and 15 had not. The 2,669 histories used in this study were obtained by home visits made by public health nurses. These visits were usually made from one to three months after the onset, after the first excitement and worry of the illness had passed and the family had had the opportunity to think over and discuss various events that either preceded or accompanied the illness. In this way, somewhat more accurate histories were probably obtained than might have been the case if the interview had been conducted during the acute illness when the informant was upset and worried as to the eventual outcome.

So far as possible, information was obtained from the patient's mother. In practically all histories of children under 15 years of age, the mother was the informant. Other persons gave information about patients between 15 and 19; concerning those 20 and over, husbands, wives, and in-laws constituted a high proportion of the informants. There is an obvious difference in the degree of reliability of certain information in the different age groups. The histories of patients in the group under 15 are more reliable with respect to past events, such as operations, than are those of patients in the group 20 and over; the mother is better informed on such matters than is any other member of the average family.

Among the items on which data were gathered was the history of operations. Specific questions were asked as to whether the patient had had a tonsillectomy and, if so, the approximate date of operation. No attempt was made to distinguish between operations that did or did not include removal of adenoids as the average parent would be uninformed on such details. The term "tonsillectomy" as used in this paper, therefore, may or may not include adenoidectomy. A specific question regarding appendectomy was also included and a general question regarding all other operations. The data obtained thus represent the response of the informant to specific as well as to general questions and have the obvious elements of inaccuracy that enter into any data based on memory. There is no reason to suspect, however, that the informant's memory was any more or less accurate according to the severity or type of involvement of the patient. In other words, there is no evidence to suggest that the history of bulbar poliomyelitis is any more or less accurate than the history of the spinal or nonparalytic forms.

The cases of poliomyelitis were classified by type of involvement solely on the basis of history. Those includ-

6. Top, F. H.: Occurrence of Poliomyelitis in Relation to Tonsillectomies at Various Intervals, J. A. M. A. **150**: 534-538 (Oct. 11) 1952.

7. Southcott, R. V.: Studies on a Long Range Association Between Bulbar Poliomyelitis and Previous Tonsillectomy, M. J. Australia **2**: 281-298 (Aug. 22) 1953.

ing evidence of difficulty in swallowing, breathing, and phonation or other signs of involvement of the cranial nerves were classified as cases of bulbar poliomyelitis without attempting to distinguish between bulbar, bulbo-

TABLE 2.—*Data on Patients with Poliomyelitis Who Gave History of Tonsillectomy by Type of Infection and by Sex (Minnesota, 1946)*

	Males	Females
Bulbar		
No. of patients	312	223
No. of patients with tonsillectomy	226	156
% of patients with tonsillectomy	72.4	70.0
Severe spinal		
No. of patients	525	411
No. of patients with tonsillectomy	154	142
% of patients with tonsillectomy	29.3	26.8
Mild spinal		
No. of patients	477	431
No. of patients with tonsillectomy	154	142
% of patients with tonsillectomy	32.3	32.9
Nonparalytic		
No. of patients	149	141
No. of patients with tonsillectomy	54	47
% of patients with tonsillectomy	36.2	33.3
Total		
No. of patients	1,463	1,206
No. of patients with tonsillectomy	588	455

bulbar cases gave a history of tonsillectomy as contrasted with 28.2% of the 936 with severe spinal, 32.6% of the 908 with mild spinal, and 34.8% of the 290 with nonparalytic cases. The data in these tables confirm the findings of Top that absence of tonsils is more frequently noted in the bulbar than in the nonbulbar infections.

Even more significant than the absolute difference between the bulbar and the other groups is the fact that this difference holds at all ages and in both sexes and is actually greater in the age groups under 15 than in the older age groups. This latter may possibly be due to greater accuracy of history in the younger group.

The same basic data were analyzed to show the distribution of the patients who had and who had not had tonsillectomy according to type of involvement (table 3). Of these, 36.6% of the former had bulbar involvement as contrasted with only 9.4% of the latter. The fact that the difference held quite uniformly at all ages indicates that it is not due to concentration of bulbar cases in the older patients. If these data are analyzed by individual years of age, it is found that there were only three age groups, those 2 years old, those 17 years old, and those 19 years old, in which the proportion of bulbar cases in

TABLE 3.—*Number and Percentage of Poliomyelitis Patients in Whom Various Types of Infection Developed*

Age of Patient, Yr.	Total No. of Cases		Bulbar				Severe Spinal				Mild Spinal				Nonparalytic			
	With Tonsils	Without Tonsils	With Tonsils		Without Tonsils		With Tonsils		Without Tonsils		With Tonsils		Without Tonsils		With Tonsils		Without Tonsils	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0- 4	81	694	21	25.9	59	8.5	26	32.1	322	46.4	27	33.3	246	35.4	7	8.6	67	9.7
5- 9	322	422	139	43.2	30	7.1	67	20.8	148	35.1	79	24.5	177	41.9	37	11.5	67	15.9
10-14	268	193	99	36.9	16	8.3	58	21.6	77	39.9	85	31.7	76	39.4	26	9.7	24	12.4
15-19	141	128	38	27.0	17	13.3	50	35.5	47	36.7	40	28.4	49	38.3	13	9.2	15	11.7
20-over	231	189	85	36.8	31	16.4	63	27.3	78	41.3	65	28.1	64	33.9	18	7.8	16	8.5
Total	1,043	1,626	382	36.6	153	9.4	264	25.3	672	41.3	296	28.4	612	37.6	101	9.7	189	11.6

spinal, or encephalitic forms. The cases of spinal disease were divided into severe spinal and mild spinal on the basis of the extent of involvement. A sample of such cases was reclassified on the basis of degree of residual paralysis. Those patients with definite disability were classed as having severe and those with no residual paralysis or only a mild weakness as having mild cases. While this method resulted in the shift of an occasional case from one group to the other, there was no essential change in the total size of each group. The nonparalytic cases were those with no history of either weakness or paralysis at any time.

It is realized that classification solely on the basis of informant's history leads to certain inaccuracies. In connection with another study of this series,[8] a representative sample of cases was cross checked with hospital records. This revealed only occasional discrepancies in classification, chiefly in the nonparalytic and mild spinal cases. No discrepancies were found with respect to bulbar cases, which in the present study constitute the most important group.

RESULTS OF STUDY

Tonsillectomy.—The cases of each type in which a history of tonsillectomy at some time prior to onset of poliomyelitis was given are summarized in table 1 as to age of the patient and as to sex in table 2. It will be noted that for all age groups 71.4% of the 535 persons with the patients who had not had a tonsillectomy was higher than in those who had. In most of the ages, the sample was of such size that the difference was statistically significant. Thus in those 10 years old, 24 (43%) of 56 cases of poliomyelitis following tonsillectomy were of the bulbar type as contrasted with only one (3%) of the 34 cases that were not preceded by tonsillectomy. If one takes the cases of patients under 15 years of age as a group, 259 (38.6%) of the 671 following tonsillectomy were of bulbar involvement as contrasted with only 105 (8%) of the 1,309 not preceded by tonsillectomy. In other words, if recognizable poliomyelitis developed in a child who still had his tonsils, the chances were only 1 out of 12 that the infection would be bulbar, but, if the child had at some time had the tonsils removed, the chances of bulbar involvement were more than 1 out of 3.

The magnitude of this effect is quite apparent in table 4 that shows the differences between the number of bulbar cases in the patients who had tonsillectomy and the number that might have been expected if this group had had the same proportion of bulbar involvement as had the patients who had not had tonsillectomy. Thus the table shows that among the 694 patients who had not had tonsillectomy, up to 4 years of age, only 59 bulbar cases developed, or 8.5%. If the 81 patients who had had

8. Anderson, G. W., and Skaar, A. E.: Poliomyelitis Occuring After Antigen Injections, Pediatrics 7: 741-759 (June) 1951.

tonsillectomy, in this age group, had had the same rate of bulbar involvement, there would have been only 6.9 bulbar cases. Actually there were 21, or an excess of 14.1 cases attributable to the higher bulbar rate in those who had had tonsillectomy. As a result of similar calculations for each age group, it is found that there were 273 more bulbar cases in the entire group than might have been expected if all had had the same rate of bulbar involvement as did the group of patients who had not had tonsillectomy.

Age and Sex.—Before any conclusions can be drawn as to whether the differences recorded above are due to factors other than tonsillectomy, it is necessary to make certain that presence or absence of tonsils is the only differentiating factor. Table 1 shows that age was not a factor, as the phenomenon appears at all ages and is even more striking in the children than in the adults. Sex is likewise not a factor (table 2). Of the 2,669 patients, 1,463 (54.8%) were male and 1,206 (45.2%) females. Of the 1,043 patients who had had tonsillectomy, 588 (56.4%) were male and, of the 1,626 who had not, 875 (53.8%) were male. The differences are not statistically

TABLE 4.—*Expected Number of Cases of Poliomyelitis with Bulbar Involvement if Tonsils Had Not Been Removed*

	Group Not Having Had Tonsillectomy			Group Having Had Tonsillectomy			
Age, Yr.	No. of Cases	No. of Bulbar Cases	% Bulbar Cases	No. of Cases	Expected No. of Bulbar Cases	Actual No. of Bulbar Cases	Excess of Bulbar Cases
0-4	694	59	8.5	81	6.9	21	14.1
5-9	422	30	7.1	322	22.9	139	116.1
10-14	193	16	8.3	268	22.2	99	76.8
15-19	128	17	13.3	141	18.7	38	19.3
20-over	189	31	16.4	231	37.9	85	47.1
Total	1,626	153	....	1,043	108.6	382	273.4

significant. One may conclude, therefore, that the differences in frequency of bulbar infection in the two groups are not attributable to age or sex differences.

Economic Status.—Another possible difference in the two groups is the social or economic status of the patients. It has been suggested that those who had had tonsillectomy might be from a higher economic level in that their families had the financial resources with which to provide for tonsil removal and that the differences in rate of bulbar involvement might be related to unknown factors associated with such economic differences rather than to the presence or absence of tonsils. In an attempt to test this hypothesis, a sample of 101 patients with bulbar and 105 with severe spinal forms from Minneapolis was separately tabulated; the number of persons per room in the usual place of abode was used as the measure of economic status. The usual place of abode was selected to avoid errors occasioned by temporarily more crowded living quarters of those who became ill while at a summer resort. Table 5 shows that there was no significant difference in the economic level of the two groups. While this does not eliminate the possibility of action of some factor other than tonsillectomy, it at least fails to lend support to the hypothesis of economic differences.

9. Ingalls, T. H., and Aycock, W. L.: Upper-Respiratory Infection as a Factor Influencing Susceptibility to Poliomyelitis, New England J. Med. 245: 197-203 (Aug. 9) 1951.

Upper Respiratory Tract Infections.—Another factor that has been suggested is the relative frequency of upper respiratory tract infections. It is possible that a higher frequency of such infections in the group of patients who had tonsillectomy had prompted removal of the tonsils. If this group actually had more colds or a greater incidence of sore throats, the difference in type of involvement might conceivably be due to a reduced local resistance that would permit virus invasion, it being assumed that invasion was facilitated by such infection, as suggested by Ingalls and Aycock.[9] Two measures of throat involvement have been used, tonsillitis and common colds. Table 6 shows that the patients who had had tonsillectomy gave histories of tonsillitis (52.1%) more frequently than did those who had not (19.2%). This might have been expected, as tonsillar infection would presumably have been a reason for operation. On the other hand, within each group there was no essential difference in percentage of bulbar involvement. Thus in the group having had tonsillectomy, 34.7% of those with a history of tonsillitis had bulbar involvement while 38.2% of those without such a history had a bulbar type of infection. In the group not having had tonsillectomy the corresponding percentages were 11.3 and 8.8. This fact would suggest that, so far as could be determined on the basis of history, prior pathological conditions of the throat had no demonstrable effect on the type of reaction to subsequent poliomyelitis infection.

TABLE 5.—*Economic Status of Patients with Poliomyelitis by Type of Involvement and Number of Persons per Room in Household (Minneapolis, 1946)*

	Bulbar		Severe Spinal	
No. of Persons/Room	No. of Persons	%	No. of Persons	%
0.5 or less	6	6	5	5
0.51-0.75	15	15	25	24
0.76-1.00	42	42	45	43
1.01-1.50	29	29	19	18
1.51-2.00	7	7	7	7
2.01 or more	2	2	4	4
Total	101		105	

TABLE 6.—*Incidence of Bulbar Involvement in Poliomyelitis According to History of Tonsillitis and Tonsillectomy*

	Tonsillectomy		No Tonsillectomy	
	No.	%	No.	%
History of tonsillitis	536	....	309	....
Bulbar cases	186	34.7	35	11.3
No history of tonsillitis	492	....	1,302	....
Bulbar cases	188	38.2	114	8.8
Total no. of cases *	1,028		1,611	

* 30 cases were omitted because of inadequate data on tonsillitis.

Analysis of the data with respect to other more recent types of involvement indicative of a greater degree of upper respiratory tract disease in the group who had than in the group who had not had tonsillectomy is given in table 7, which shows the percentage of the two groups giving a history of frequent colds. The table shows that of 942 patients who had had tonsillectomy 412 (43.7%) gave histories of three or more colds a year as compared with 547 (37.1%) of 1,473 of those who had not. Similarly bulbar involvement developed in 21.4% of those

with histories of three or more colds a year as compared with 19.3% with two or less a year. In those with tonsillectomy, the percentages were 36.2 and 37.5 and in those without tonsillectomy 10.2 and 8.9, respectively. While we realize the unreliability of histories of common colds, there is no reason to believe that the reliability in these cases should vary with the type of response to the poliomyelitis infection. The histories of the patients with the bulbar form should be no more or less accurate than the histories of the patients with the spinal and nonparalytic forms.

From tables 6 and 7 it appears that while patients who had had tonsillectomy did actually show a slightly greater degree of nose and throat diseases than did those with tonsils still in situ, the differences between the two groups were not enough to explain the higher proportion of bulbar cases in the former. At the same time, it appears from these data that when each group is treated separately the type of response to poliomyelitis virus infection is not related to history of tonsillitis or of frequent colds; therefore, one is justified in concluding that the higher frequency of the bulbar type in the patients who have had tonsillectomy is not related to the frequency of nose and throat infection that might have prompted the tonsillectomy.

TABLE 7.—*Reported Frequency of Colds According to History of Tonsillectomy and Type of Involvement*

	No. of Colds in Patients Who Had Tonsillectomy				No. of Colds in Patients Who Had Not Had Tonsillectomy				Total			
	0-2/Yr.		3 or More/Yr.		0-2/Yr.		3 or More/Yr.		0-2/Yr.		3 or More/Yr.	
Type of Involvement	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
Bulbar	199	37.5	149	36.2	82	8.9	56	10.2	281	19.3	205	21.4
Severe spinal	125	23.6	110	26.7	394	42.5	204	37.3	519	35.6	314	32.7
Mild spinal	153	28.9	117	28.4	344	37.1	216	39.5	497	34.1	333	34.7
Nonparalytic	53	10.0	36	8.7	106	11.4	71	13.0	159	10.9	107	11.2
Total *	530		412		926		547		1,456		959	

* 254 case histories had to be discarded because of inadequate data as to frequency of common colds. Of these, 101 patients had had tonsillectomy and 153 had not. In 49 of these patients the involvement was bulbar. The percentage distribution by types of involvement was essentially the same as for the entire group.

TABLE 8.—*Type of Involvement in Patients with Poliomyelitis According to Interval Between Tonsillectomy and Onset of Poliomyelitis**

	Less Than 1 Mo.		1-5 Mo.		6-12 Mo.		1-5 Yr.		6-10 Yr.		More Than 10 Yr.		Total	
Type of Involvement	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
Bulbar	13	65	9	20	13	29	163	39.0	90	37.0	81	35.4	369	36.9
Severe spinal	3	15	14	31	13	29	90	21.5	61	25.1	66	28.8	247	24.7
Mild	2	10	18	40	11	24	119	28.5	68	28.0	70	30.6	288	28.8
Nonparalytic	2	10	4	9	8	18	46	11.0	24	9.9	12	5.2	96	9.6
Total	20		45		45		418		243		229		1,000	

* 43 cases omitted because of lack of data as to date of tonsillectomy.

POSSIBLE EXPLANATIONS

If we accept these findings that the absence of tonsils predisposes to bulbar involvement if poliomyelitis develops, we may logically inquire as to the reasons. Numerous hypotheses have been advanced that are tested herewith.

Healing Processes.—The processes associated with the healing after tonsillectomy may alter the permeability of the throat. If this were true, the differences in the groups that have and have not had tonsillectomy would appear for only a limited period after operation, after which the percentage of bulbar involvement in the two groups would be identical. Table 8 shows, however, that there is no such time element in this difference. Cases that developed within the first month postoperatively showed the usual excessively high percentage of bulbar involvement that has been so commonly attributed to invasion along the severed nerve fibers. During the first to fifth month, when reparative processes were most active, 20% of the cases were bulbar, and in the second half of the postoperative year 29% were bulbar. In those persons who had undergone operation one to five years prior, the rate of bulbar involvement rose to 39% and remained comparably high in those who had been operated on more than five years prior to onset of poliomyelitis. These rates are all in sharp contrast to the 9.4% of bulbar involvement in the patients who had not had tonsillectomy. It is apparent that, aside from the first month, the length of time after operation is not a factor in the high percentage of bulbar infection in poliomyelitis patients who have had tonsillectomy.

Anesthesia.—The anesthesia incidental to tonsillectomy may have caused unrecognized damage to the brain cells or capillaries of the medulla with the result that these were points of lowered resistance so that a virus circulating in the blood stream could attack these special areas with resultant bulbar involvement. If this hypothesis were correct, there should be a comparably high rate of bulbar involvement in persons who gave a history of operations other than tonsillectomy. Table 9 shows, however, that the percentage of cases of bulbar involvement is no higher in this latter group (9%) than in those who have undergone no operation (9.5%). These results fail to support the idea of prior anesthetic damage as a factor in the high bulbar rate in the poliomyelitis patients who have had tonsillectomy.

Central Nervous System Damage.—Unrecognized central nervous system damage may have resulted from severing the tonsillar nerve fibers. One person with whom

these data have been discussed has suggested that the cutting of nerve fibers at the time of operation might have produced some alteration of the nerve cells in the 9th and 10th nuclei with the result that these cells, though apparently otherwise normal, were less resistant to invasion by a virus circulating in the blood stream. If this hypothesis were correct, one might equally assume that, since the nerve fibers that are severed during appendectomy come from the same portion of the cord as do those that innervate the right leg, there would have been more right leg involvement in the patients who have had appendectomy than in those who have not undergone such an operation. In the entire series, there were 67 patients who gave a history of appendectomy and who showed involvement of only one leg or definitely severer paralysis of one leg. Of these patients, 35 (52%) showed right leg involvement, a figure that in itself fails to support the hypothesis of greater involvement on the right side. By way of comparison, a group of patients who had not had appendectomy was drawn, matched so far as possible for age, sex, and county of residence. An identical proportion of these, showed right leg paralysis (table 10).

Direct Invasion.—At least some of the bulbar cases represent direct invasion of the virus from the throat without prior viremia, tonsillectomy having altered the permeability of the mucous membranes. While no one would deny the evidence that viremia occurs in the early stages of infection of chimpanzees fed poliomyelitis virus or in some human beings, such findings do not prove that viremia is a constant occurrence in infection in human beings or that the virus is always absorbed from the intestinal tract or taken in with food. Whether the virus is taken into the body by respiratory spread, by food, or by placing contaminated fingers in the mouth, the virus, even if swallowed, must pass over the pharyngeal area. There is, therefore, the chance for direct absorption of virus from the throat as well as from the intestine.

If the virus invades the body from the throat, one may postulate two possible routes of absorption—via lymphatics to the blood stream or via nerve fibers to the brain. Absorption into the lymphatics would mean movement of the virus into the blood stream, as there are no direct lymphatic connections between the brain and the throat.

TABLE 9.—*Type of Involvement in Patients with Poliomyelitis According to History of Prior Operations (Minnesota, 1946).*

	Tonsillectomy		No Tonsillectomy					
			Other Operation		No Other Operation		Total	
Type of Involvement	No. of Cases	%	No. of Cases	%	No. of Cases	%	No. of Cases	%
Bulbar	382	36.6	16	9.0	137	9.5	153	9.4
Severe spinal	264	25.3	76	42.9	596	41.1	672	41.3
Mild spinal	296	28.4	71	40.1	541	37.3	612	37.6
Nonparalytic	101	9.7	14	7.9	175	12.1	189	11.6
Total	1,043		177		1,449		1,626	

While one can still speculate as to possible unrecognized damage to bulbar nerve cells as a result of severance of tonsillar nerve fibers, the data of table 10 fail to lend any support to such a hypothesis.

Systemic Effects.—Systemic effects may alter the localization of virus. Bodian [4] and others have recently advanced the hypothesis that the virus enters the body from the gastrointestinal tract, with a resultant viremia in the early stages of the infection and subsequent invasion of the central nervous system by passing through capillary walls "at a point of greater penetrability, such as the area postrema in the medulla oblongata," with further spread along neural pathways. If viremia is a constant feature of the early stages of poliomyelitis (a hypothesis that has not yet been proved), the high proportion of bulbar involvement in the absence of tonsils must be explained on the assumption that the mere removal of tonsils had in some way altered either the nerve cells or the capillaries of the medullary area. A systemic effect that is due to removal of lymphoid tissue is hard to imagine, as the tonsils represent so small a fraction of the total lymphoid tissue of the body or even of the nose and throat. The possibility of such changes can be neither denied nor supported by any data gathered in this survey. The burden of proof rests, however, on those who support such a hypothesis.

There is no reason to suppose that the subsequent localization of virus circulating in the blood stream would be conditioned by the location of the portal of absorption. Thus one would not expect to find a greater number of bulbar cases from viremia subsequent to throat absorption than from viremia subsequent to intestinal absorption.

TABLE 10.—*Leg Paralysis in Patients Who Have and Have Not Had Appendectomy**

	Appendectomy		No Appendectomy	
Leg Paralyzed	No. of Cases	%	No. of Cases	%
Right	35	52	23	52
Left	32	48	21	48
Total	67		44	

* Group having had an appendectomy includes patients who had paralysis of only one leg or severer paralysis in one leg; control group was matched for age, sex, and county.

On the other hand, if the virus were absorbed from the throat by means of nerve fibers, one would expect a high proportion of bulbar cases. The tonsillar crypts are innervated by the 9th and 10th cranial nerves. These fibers, less than 2 in. in length, pass into the medulla where the ganglions are in immediate proximity with the respiratory cells and the motor cells of the throat muscles. Absorp-

tion from the throat via nerve fibers would, therefore, be attended with a special risk of bulbar involvement. One may well postulate that removal of the tonsils may have facilitated throat invasion through removal of some natural barrier and as a consequence promoted a higher proportion of bulbar involvement.

COMMENT

The foregoing data clearly confirm the earlier observations of Top that persons with bulbar poliomyelitis are more likely to have had their tonsils removed than are those with spinal or nonparalytic forms of the disease. The data further show that bulbar involvement occurs in over a third of the patients whose tonsils are not present at the time of onset, whereas less than a tenth of the patients who have not had tonsillectomy show bulbar response. In other words, absence of the tonsils increases the risk of bulbar involvement about fourfold. These observations raise several questions regarding both the age distribution and the pathogenesis of bulbar infections.

It has been common observation that bulbar involvement is more frequently seen in adults than in small children. The usual interpretation of this phenomenon has been that it is in some way associated with age per se. The data presented here indicate, however, that this tendency for older persons to have a bulbar type of disease is due to the fact that they are more likely to have had their tonsils removed than are children and that it is the absence of the tonsils rather than the age that conditions the bulbar type of response to infection. That this is the more reasonable explanation is suggested by the data of table 3 that shows the proportion of bulbar cases at each age for the patients who have and who have not had tonsillectomy. It will be noted that for the former the proportion of bulbar cases was essentially the same in each of the age groups. In other words, the likelihood of a bulbar response to poliomyelitis virus invasion in a patient who has had tonsillectomy was just as great in a small child as in an adult—a risk of over one in three. By way of contrast, the risk in those who have not had tonsillectomy was less than one in 10. In this latter group, the adults tended, however, to have a slightly higher proportion of bulbar involvement than did the children, a difference for which no explanation is currently suggested. Too much reliance cannot be placed on many of the adult histories, however, as a negative history of operation may mean that the informant did not have positive knowledge of the fact.

If the foregoing explanation is correct, the higher proportion of bulbar cases today than 30 years ago may well be associated with the shift in age distribution of poliomyelitis and the increased frequency of tonsil operations. In the 1916 New York City outbreak, 79% of the reported cases were in persons under 5 years of age as contrasted with only 29% in 1949. In Minnesota, 42% of the cases in 1916 were in persons under 5 but only 27% in 1946. Unfortunately no reliable data are available as to the number of children at various ages who have lost their tonsils, but it is common knowledge that there are few operations performed before the age of 5 years and that the percentage of children who have had tonsillectomies increases rapidly in the early school years. Evidence of this is seen in table 1. Thus the shift in age distribution has meant that more of the victims of poliomyelitis are in the age group of persons who have undergone tonsillectomy and in whom a bulbar response is more likely to develop if infected. The greater frequency with which tonsil operations are performed today than 30 years ago may be a further factor in the greater proportion of bulbar cases.

Similarly these data offer an explanation of the comparative absence of bulbar poliomyelitis in certain foreign countries where the age distribution is so different from that currently observed in the United States. In certain of these countries, such as Egypt, Chile, and Japan, most of the infections occur in children under 5 and bulbar involvement is almost unknown. This lack of bulbar involvement may well be due to the almost invariable presence of the tonsils at the ages at which the vast majority of the infections occur.

These observations as to the higher proportion of bulbar involvement in patients who have had tonsillectomy also raise serious questions as to the pathogenesis of bulbar poliomyelitis. It is common belief that the virus enters the body through either the nose or mouth, or both, is swallowed, and then is absorbed from the intestinal tract. The recent demonstration of viremia in the early stages of the disease in the monkey and of nonparalytic cases has led to the further hypothesis that viremia may be a constant early phenomenon, that the virus escapes from the blood through the capillary wall, and that the localization of the paralysis is dependent on the differential permeability of the capillaries of various parts of the central nervous system.

If this concept of the pathogenesis of poliomyelitis is correct, then one must assume that bulbar involvement occurs in the person whose medullary capillaries are especially permeable. The explanation of the higher proportion of bulbar cases in those whose tonsils are not in situ would require the assumption that removal of the tonsils has in some unknown manner increased the permeability of the capillaries of the medulla. Evidence for such an effect on the permeability is not contained in this study and such does not appear reasonable.

A more plausible hypothesis explaining the high proportion of bulbar involvement in patients who have had tonsillectomy is that of direct invasion from the throat, an invasion facilitated by removal of the tonsils. There is no evidence in the data presented here to give any clue to the exact mechanism of this invasion or even to prove that such invasion occurs. The fact that the nuclei of the motor nerves serving the tonsillar fossae are anatomically in juxtaposition with those involved in bulbar poliomyelitis suggests, however, that there may be some causal relationship. Southcott [7] has suggested that the "trauma of tonsillectomy renders the motor nerves of the tonsillar region more accessible to the entry of virus to them from the pharyngeal surface." Since progress of the virus along nerve fibers has been demonstrated, one may agree with the suggestion of Southcott that the virus in these cases probably progresses to the medulla along fibers of the 9th and 10th cranial nerves. This seems a more plausible explanation for the high rate of bulbar involvement in patients who have had tonsillectomy than the equally

hypothetical alteration in capillary permeability. The data presented here certainly constitute a serious challenge to the concept of localized escape following viremia, especially since viremia in a person in whom bulbar infection later developed has not yet been demonstrated.

The hypothesis of direct invasion in the patients who have had tonsillectomy does not preclude the possibility of bulbar escape of virus from viremia but rather offers an alternate mechanism. The strikingly lower rate of bulbar involvement in those who have not had tonsillectomy suggests a different mechanism for reaching the bulbar nuclei. If viremia does exist, there is always the possibility of escape through the capillaries of various parts of the nervous system, including the medulla. Thus some of the bulbar cases may represent the response to direct invasion, while others result from virus escaping from the blood stream into the bulbar area. Both types of invasion may possibly occur, the large number of bulbar cases in patients who have had tonsillectomy representing merely the excess resulting from direct invasion.

The answer to these many questions must await further studies, especially in the laboratory, for epidemiological observations of the type recorded here can do no more than serve as challenges to prevailing hypotheses and suggest questions for further investigation. Any hypothesis as to pathogenesis must, however, be in conformity with observed facts as to the occurrence of poliomyelitis. It is our belief that the prevailing concept of escape of virus following viremia does not constitute a satisfactory explanation for the demonstrated high frequency of bulbar response to infection with poliomyelitis virus in persons who have had tonsillectomy.

Another question raised by these observations is the relationship between the tonsils and the development of recognizable poliomyelitis. It is well known that, although poliomyelitis virus infection is of almost universal occurrence, only the rare person responds with sufficient involvement of the nervous system to make clinical diagnosis possible. Evidence is available to indicate that several factors such as recent tonsillectomy, pregnancy, excessive fatigue, and recent injection of insoluble antigens may tip the scale between an immunizing abortive infection and one involving the central nervous system. One may well ask whether the presence or absence of tonsils can also be a factor in conditioning a paralytic response. Unfortunately there is nothing in the data reported here that will shed any light on this question. The data do not suggest that a child who has had a tonsillectomy is any more or less likely to have a recognizable form of the disease if he is infected. They do, however, show that, if a recognizable form of the disease occurs in a person who has had tonsillectomy, it is more likely to be of the bulbar type than if the person has not had his tonsils removed. No inference is to be drawn as to the desirability of tonsil removal, although the data do carry a suggestion of the importance of suitable indication for removal before operation is undertaken.

SUMMARY AND CONCLUSIONS

It has been found that persons with the bulbar type of poliomyelitis give a history of removal of the tonsils more frequently than do persons with other forms of poliomyelitis and that, if clinically recognizable poliomyelitis develops in a person who has had his tonsils removed, the likelihood of bulbar involvement is four times as great as in one whose tonsils are in situ. This higher proportion of cases of bulbar involvement in patients who have had tonsillectomy occurs at all ages regardless of the time that has elapsed since operation. This higher proportion in older persons is due primarily to absence of the tonsils rather than to age per se. The higher proportion of bulbar involvement in recent years may be due to the greater frequency of tonsillectomy and the shift in age distribution of poliomyelitis to the ages at which tonsils may have been removed. The lack of cases of bulbar involvement in certain areas may be due to the concentration of poliomyelitis in ages before tonsil removal. The hypothesis that bulbar involvement is due to escape of the virus from the blood stream through the capillaries of the medullary area is not compatible with the greater incidence of such cases in persons who have had tonsillectomy. It is possible, however, that the excess of bulbar involvement in persons who have had tonsillectomy is due to direct invasion along fibers of the 9th and 10th cranial nerves. No evidence was found as to the effect of tonsillectomy in altering susceptibility to clinically recognizable poliomyelitis. The data presented deal only with likelihood of a bulbar involvement if clinically recognizable poliomyelitis develops.

ADDENDUM

Since the preparation of this manuscript, Weinstein, Vogel, and Weinstein [10] of Boston have reported similar findings from a study of 800 cases of poliomyelitis. Of 500 persons who had had tonsillectomy, 28% (73 with bulbar and 67 with bulbospinal cases) had bulbar involvement as contrasted with only 8% (12 with bulbar and 13 with bulbospinal cases) in 300 patients whose tonsils were still in situ.

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10. Weinstein, L.; Vogel, M. L., and Weinstein, N.: A Study of the Relationship of the Absence of Tonsils to the Incidence of Bulbar Poliomyelitis, J. Pediat. 44: 14-19 (Jan.) 1954.

Cervical Spine Injuries.—Early recognition and immediate treatment of cervical spine injuries are imperative. Early recognition may avoid irreparable cord damage that results in paraplegia, quadriplegia or death. Immediate treatment not only minimizes unfortunate complications such as paralysis, paresthesias, urinary infection, decubiti and myositis ossificans, but also facilitates early rehabilitation. Dislocation of the cervical spine most frequently promotes these unfortunate complications. It generally results from trauma, but may occur spontaneously during an illness. Traumatic dislocation frequently is associated with a fracture. It is, however, the dislocation that demands the primary consideration. . . . Patients suspected of cervical spine injury must be transported with the neck immobilized by manual traction. Immobilization is continued until the type and extent of injury can be evaluated by x-ray and clinical examination, and spinal tap with manometric study. Simple dislocations are reduced by either skeletal traction or open reduction. In children, reduction can be obtained by dependency of the head. Manipulation is hazardous and should be avoided. Fracture-dislocations with cord involvement often require surgical intervention.—J. T. Nicholson, M.D., and W. S. Armour, M.D., Recognition and Treatment of Cervical Spine Injuries, *Surgical Clinics of North America*, December, 1953

IMPORTANCE OF APPRAISING THE TRUE GASTRIC ACIDITY AFTER SUBTOTAL GASTRECTOMY

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When he does a subtotal gastrectomy, the surgeon is often asked how much of the stomach he removes in order to perform an adequate resection. While every surgeon has certain measurements and criteria that he applies to this problem, he is actually not in a position to answer the question adequately. By his standards he is able to state the procedure that he considers will produce an adequate resection anatomically but is unable to give assurance that the resection will be adequate physiologically. For the patient, however, it is vital that the resection be adequate in the latter sense, for on it depend his chances of remaining free of new ulcer disease. Studies of gastric secretion after subtotal gastrectomy and attempts to correlate these with the amount of stomach resected indicate that the removal of apparently equal portions of the stomach in different patients anatomically fails to produce similar effects on gastric secretion within the same period of time.

A primary objective in performing subtotal gastric resection is, of course, to prevent the recurrence of ulcer disease, and this can only be adequately accomplished if gastric anacidity is produced as a result of the operation. The degree of anacidity necessary to assure such protection against the development of a new ulcer can only be achieved if the pH of the gastric contents, after resection, is at all times above pH 5 (proteolytic neutralization point of Hollander [1]), at which level of acidity peptic activity is reduced to a minimum. A resection that produces such a result would be adequate physiologically.

Prompted by the above considerations, we have studied gastric secretion in patients who had subtotal gastric resections to determine whether changes in gastric secretion produced by this operation were evident soon after the operation and whether the changes were fixed by the operation.

The procedure followed was a fractional Ewald gastric analysis done before the operation, within one to two weeks after surgery, and at intervals thereafter for a period of a year or longer. A Rehfuss tube is passed after a 12 hour overnight fast, and the stomach is emptied completely. Under fluoroscopic guidance the tube is adjusted so that the tip rests in the most dependent portion of the intact stomach and just above the stoma in the partially resected stomach. The tube is further adjusted to remove any slack and is then fixed to the chin with adhesive tape. The test meal consists of two pieces of zwieback and 300 cc. of tap water at room temperature. Fifteen minute extractions are taken until the stomach is empty. Each specimen, after it is filtered through cotton, is titrated for free and total acidity, using Töpfer's reagent and phenolphthalein, respectively, as indicators. If no free acid is detected throughout the test by this procedure, then pH determinations are done using a Beckman pH meter with microcup attachments. It was previously [2] suggested that the selection of pH 3.5, the upper level of pH at which Töpfer's reagent indicates the presence of free hydrochloric acid, is not adequate for studying the problem of anacidity as it concerns primary anemia. This is equally true in the present problem—acidity of gastric contents of the partially resected stomach.

RESULTS AND COMMENT

The data obtained in cases 1 and 2 (tables 1 and 2) represent what we would consider satisfactory results in gastric secretion after subtotal gastric resection. Only the pH readings supply a reasonable basis on which the physiological adequacy of the gastric resection can be judged. Gastric analysis six weeks and more postoperatively (case 1) not only has failed to show free acid to titration but also has shown a pH of the gastric contents that remains consistently above 5. Even better is the fact that, at the end of a year, pH values approximate neutrality.

Of special interest, however, are the results seen in the gastric analysis done two weeks after operation when even to titration free acid was still present. This failure to find a satisfactory anacidity shortly after operation has proved to be a usual experience with the ulcer patient who has had a subtotal gastrectomy, even though anatomically wide resections are done. The length of time required postoperatively for acceptable pH values to become established varies in different persons. Thus, in the patient in case 3, completely satisfactory adjustment of pH did not occur until three months after operation; for the patient in case 5, this adjustment cannot be considered satisfactory after six months; and perhaps the adjustment is not entirely satisfactory for the patient in case 6, even 18 months postoperatively.

Case 4 illustrates especially the need for pH readings in evaluating results of gastric analysis in duodenal ulcer patients after subtotal gastrectomy. In the gastric analysis done two months after operation the pH values alone indicated the true nature of the remaining gastric acid secretory activity, which was shown by the presence even of titratable free acid at 15 months. However, when this patient was examined again at two years, the previously misleading data found on titration alone again were obtained, since the pH of the gastric contents dropped to a low of 2.97 during the course of the test, even though no free acid was detectable to the eye of a very experienced technician when Töpfer's reagent was added to the specimens of gastric contents.

Tests should be repeated periodically in the patient with a resected stomach until such time as satisfactory pH readings are obtained. Until such a point is reached the person should be treated as a potential ulcer patient,

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1. Hollander, F.: What Constitutes Effective Neutralization of Gastric Contents? Am. J. Digest. Dis. **6**: 127, 1939.

2. Shay, H.; Komarov, S. A., and Berk, J. E.: Some Fallacies in Clinical Measurement of Gastric Acidity with Special Reference to Histamine Test, Gastroenterology **15**: 110-117 (May, pt. 1) 1950.

if we are to institute all possible measures to prevent a marginal ulcer. I believe these data supply evidence on which the development of a marginal ulcer after subtotal gastrectomy with a supposedly anacid gastric pouch can be explained, if in such cases the presence of anacidity was predicated on the failure to find titratable free acid after a test meal or even after the administration of histamine. Furthermore, the results in case 5 indicate that the physician should not become too smug about the two weeks and those obtained nine months after operation are compared.

The data recorded, which are representative of the results obtained in a group of 16 patients after subtotal gastric resection, warrant the conclusion that the removal of approximately 75% of the stomach does not by itself determine the ultimate secretory activity of the remaining gastric segment. Certain changes obviously occur after operation that determine the final pattern of this secre-

TABLE 1.—*Titratable Free Acid Before and After Subtotal Gastrectomy, in Milliequivalents per Liter*

Time, Min.	Pre-operatively	Time After Operation: 1 Wk.	10 Days	2 Wk.	3 Wk.	4 Wk.	6 Wk.	2 Mo.	3 Mo.	14 Wk.	4 Mo.	5 Mo.	6 Mo.	7 Mo.	9 Mo.	1 Yr.	15 Mo.	18 Mo.	2 Yr.	3 Yr.
Case 1, Duodenal Ulcer																				
Fasting	55	..	..	QNS*	..	..	0	..	..	QNS	..	..	..	..	..	QNS	..	..	..	..
15	14	..	..	0	..	..	0	..	..	0	..	..	..	..	..	0	..	..	..	..
30	12	..	..	0	..	..	0	..	..	0	..	..	..	..	..	QNS	..	..	..	..
45	24	..	..	3	..	..	QNS	..	..	0	..	..	..	..	..	QNS	..	..	..	..
60	43	..	..	4	..	..	QNS	..	..	QNS	..	..	..	..	..	QNS	..	..	..	..
75	50	..	..	1	..	..	0	..	..	0	..	..	..	..	..	QNS	..	..	..	..
90	58	..	..	5	..	..	QNS	..	..	0	..	..	..	..	..	QNS	..	..	..	..
105	58	..	..	QNS	..	..	QNS	..	..	QNS	..	..	..	..	..	QNS	..	..	..	..
120	60	..	..	9	..	..	QNS	..	..	QNS	..	..	..	..	..	QNS	..	..	..	..
Case 2, Antral Gastritis																				
Fasting	0	..	..	0	..	QNS	..	..	..	..	..	QNS	..	..	QNS	..	..	..	..	..
15	0	..	..	0	..	0	..	..	..	..	..	0	..	..	0	..	..	..	..	..
30	0	..	..	0	..	0	..	..	..	..	..	0	..	..	0	..	..	..	..	..
45	0	..	..	0	..	0	..	..	..	..	..	0	..	..	0	..	..	..	..	..
60	0.5	..	..	0	..	0	..	..	..	..	..	0	..	..	0	..	..	..	..	..
75	7	..	..	0	..	QNS	..	..	..	..	..	QNS	..	..	QNS	..	..	..	..	..
90	14	..	..	0	..	QNS	..	..	..	..	..	0	..	..	QNS	..	..	..	..	..
105	10	..	..	0	..	QNS	..	..	..	..	..	QNS	..	..	QNS	..	..	..	..	..
120	10	..	..	0	..	QNS	..	..	..	..	..	QNS	..	..	QNS	..	..	..	..	..
Case 3, Duodenal Ulcer																				
Fasting	44	..	20	..	..	..	0	..	0	..	..	..	..	0	..	..	..	..	..	..
15	14	..	0	..	..	..	0	..	0	..	..	..	..	0	..	..	..	..	..	..
30	24	..	0	..	..	..	0	..	0	..	..	..	..	0	..	..	..	..	..	..
45	40	..	1	..	..	..	0	..	QNS	..	..	..	..	0	..	..	..	..	..	..
60	43	..	22	..	..	..	0	..	QNS	..	..	..	..	QNS	..	..	..	..	..	..
75	38	..	31	..	..	..	0	..	QNS	..	..	..	..	0	..	..	..	..	..	..
90	30	..	QNS	..	..	..	0	..	QNS	..	..	..	..	QNS	..	..	..	..	..	..
105	26	..	QNS	..	..	..	0	..	QNS	..	..	..	..	QNS	..	..	..	..	..	..
120	29	..	29	..	..	..	0	..	QNS	..	..	..	..	QNS	..	..	..	..	..	..
Case 4, Duodenal Ulcer																				
Fasting	17	..	..	..	..	QNS	..	QNS	..	..	..	..	..	..	..	..	0	..	0	0
15	8	..	..	..	..	0	..	0	..	..	..	..	..	..	..	..	0	..	0	0
30	11	..	..	..	..	0	..	0	..	..	..	..	..	..	..	..	0	..	0	0
45	59	..	..	..	..	9	..	0	..	..	..	..	..	..	..	..	7	..	0	0
60	71	..	..	..	..	4	..	QNS	..	..	..	..	..	..	..	..	8	..	0	0
75	64	..	..	..	..	1	..	0	..	..	..	..	..	..	..	..	7	..	0	0
90	66	..	..	..	..	QNS	..	0	..	..	..	..	..	..	..	..	8	..	QNS	QNS
105	QNS	..	..	..	..	QNS	..	QNS	..	..	..	..	..	..	..	..	10	..	QNS	QNS
120	QNS	..	..	..	..	QNS	..	QNS	..	..	..	..	..	..	..	..	QNS	..	QNS	QNS
Case 5, Duodenal Ulcer																				
Fasting	42	0	..	0	0	0	..	0	..	..	0	..	0	..	..	..	..	..	..	..
15	11	0	..	0	0	0	..	0	..	..	0	..	0	..	..	..	..	..	..	..
30	9	0	..	0	0	0	..	0	..	..	1	..	QNS	..	..	..	..	..	..	..
45	20	0	..	0	0	0	..	0	..	..	4	..	0	..	..	..	..	..	..	..
60	26	0	..	0	0	0	..	0	..	..	2	..	QNS	..	..	..	..	..	..	..
75	27	0	..	0	0	0	..	0	..	..	0	..	0	..	..	..	..	..	..	..
90	30	0	..	0	0	QNS	..	QNS	..	..	0	..	QNS	..	..	..	..	..	..	..
105	36	0	..	0	QNS	0	..	QNS	..	..	QNS	..	0	..	..	..	..	..	..	..
120	40	0	..	0	QNS	0	..	QNS	..	..	QNS	..	QNS	..	..	..	..	..	..	..
Case 6, Duodenal Ulcer																				
Fasting	18	..	..	0	..	..	QNS	..	..	..	..	..	..	QNS	..	..	..	QNS	..	..
15	15	..	..	0	..	..	0	..	..	..	..	..	..	0	..	..	..	0	..	..
30	23	..	..	0	..	..	0	..	..	..	..	..	..	0	..	..	..	0	..	..
45	50	..	..	0	..	..	0	..	..	..	..	..	..	0	..	..	..	0	..	..
60	62	..	..	8	..	..	QNS	..	..	..	..	..	..	QNS	..	..	..	Empty	..	..
75	62	..	..	22	..	..	QNS	..	..	..	..	..	..	QNS	..	..	..	Empty	..	..
90	50	..	..	34	..	..	QNS	..	..	..	..	..	..	QNS	..	..	..	Empty	..	..
105	42	..	..	QNS	..	..	QNS	..	..	..	..	..	..	QNS	..	..	..	Empty	..	..
120	QNS	..	..	QNS	..	..	QNS	..	..	..	..	..	..	QNS	..	..	..	Empty	..	..

* QNS = quantity not sufficient.

gastric secretory response even if a minimum pH of 5 is found by gastric analysis shortly after operation. In this patient, while pH values of 5 and more were found three and four weeks postoperatively, results at two months and even at six months showed that these higher levels were not yet permanently established. Patients with gastric resection in whom the preoperative acidity was low may also fail to show maximum effect on pH of the gastric contents immediately after operation. This may be seen in the results in case 2, if the pH values obtained

tion, and these changes develop at different tempos in different patients.

The anatomic alterations that may be responsible for the change in gastric acidity that develops after the resection are not clear at present. Perhaps it is caused by a retrograde degeneration in the sectioned vagi or by mucosal atrophy or both. Considering the length of time that may elapse before the final secretory pattern may emerge, it is questionable whether retrograde nerve degeneration alone can explain the change. Practically,

however, it is of great importance that that stage of gastric secretory impairment necessary to create the degree of anacidity that would adequately protect these patients against new ulcer disease be achieved. Then and only then should we consider the resection to have produced a physiologically adequate result, and such a result can only be determined by a study of the pH of the gastric contents. These considerations become especially pertinent when we recall that symptoms of anastomotic ulcer develop after subtotal gastrectomy in those patients destined to show such ulcers, in 50% within one year and in 70% within two years after operation.[3]

TABLE 2.—*pH of Gastric Contents After Subtotal Gastrectomy*

Time After Operation														
1 Wk.	2 Wk.	3 Wk.	4 Wk.	6 Wk.	2 Mo.	3 Mo.	14 Wk.	5 Mo.	6 Mo.	7 Mo.	9 Mo.	1 Yr.	18 Mo.	2 Yr.	3 Yr.
Case 1, Duodenal Ulcer															
....	....	....	....	8.03	....	....	QNS*	....	....	....	....	QNS	....	....	....
....	....	....	....	6.85	....	....	7.93	....	....	....	....	7.92	....	....	....
....	....	....	....	5.85	....	....	6.62	....	....	....	....	7.78	....	....	....
....	....	....	....	QNS	....	....	6.72	....	....	....	....	6.91	....	....	....
....	....	....	....	QNS	....	....	7.02	....	....	....	....	6.88	....	....	....
....	....	....	....	5.59	....	....	6.48	....	....	....	....	7.59	....	....	....
....	....	....	....	QNS	....	....	6.68	....	....	....	....	QNS	....	....	....
....	....	....	....	QNS	....	....	QNS	....	....	....	....	QNS	....	....	....
....	....	....	....	QNS	....	....	QNS	....	....	....	....	QNS	....	....	....
Case 2, Antral Gastritis															
....	4.95	....	QNS	....	....	....	....	QNS	....	....	QNS	....	....	....	....
....	4.88	....	6.68	....	....	....	....	7.10	....	....	7.41	....	....	....	....
....	5.65	....	6.25	....	....	....	....	6.50	....	....	8.16	....	....	....	....
....	5.68	....	6.60	....	....	....	....	6.60	....	....	7.57	....	....	....	....
....	5.65	....	6.20	....	....	....	....	6.60	....	....	7.40	....	....	....	....
....	5.82	....	7.10	....	....	....	....	QNS	....	....	7.24	....	....	....	...
....	5.88	....	QNS	....	....	....	....	6.90	....	....	QNS	....	....	....	....
....	5.78	....	QNS	....	....	....	....	QNS	....	....	QNS	....	....	....	....
....	5.30	....	QNS	....	....	....	....	QNS	....	....	QNS	....	....	....	....
Case 3, Duodenal Ulcer															
....	....	....	....	4.65	....	6.00	....	....	....	7.40	....	....	....	....	....
....	....	....	....	5.72	....	6.30	....	....	....	6.38	....	....	....	....	....
....	....	....	....	4.95	....	6.71	....	....	....	6.34	....	....	....	....	....
....	....	....	....	3.56	....	5.89	....	....	....	6.68	....	....	....	....	....
....	....	....	....	QNS	....	QNS	....	....	....	6.90	....	....	....	....	....
....	....	....	....	QNS	....	QNS	....	....	....	5.66	....	....	....	....	....
....	....	....	....	3.35	....	QNS	....	....	....	QNS	....	....	....	....	....
....	....	....	....	6.50	....	QNS	....	....	....	5.00	....	....	....	....	....
....	....	....	....	QNS	....	QNS	....	....	....	QNS	....	....	....	....	....
Case 4, Duodenal Ulcer															
....	....	....	....	....	QNS	....	....	....	....	....	....	....	....	8.10	8.15
....	....	....	....	....	6.28	....	....	....	....	....	....	....	....	6.62	7.68
....	....	....	....	....	3.25	....	....	....	....	....	....	....	....	5.74	6.99
....	....	....	....	....	2.80	....	....	....	....	....	....	....	....	5.67	6.30
....	....	....	....	....	QNS	....	....	....	....	....	....	....	....	QNS	QNS
....	....	....	....	....	3.09	....	....	....	....	....	....	....	....	2.97	QNS
....	....	....	....	....	4.02	....	....	....	....	....	....	....	....	QNS	QNS
....	....	....	....	....	QNS	....	....	....	....	....	....	....	....	QNS	QNS
....	....	....	....	....	3.77	....	....	....	....	....	....	....	....	3.18	QNS
Case 5, Duodenal Ulcer															
6.78	3.99	6.02	7.70	....	7.05	....	....	....	3.64	....	....	....	....	....	....
5.40	4.39	6.08	6.40	....	5.62	....	....	....	5.10	....	....	....	....	....	....
5.40	5.78	5.42	6.29	....	3.73	....	....	....	QNS	....	....	....	....	....	....
5.26	5.32	5.50	5.73	....	3.31	....	....	....	4.02	....	....	....	....	....	....
3.85	4.21	6.05	6.33	....	3.30	....	....	....	QNS	....	....	....	....	....	....
4.00	4.99	5.92	6.26	....	3.39	....	....	....	4.10	....	....	....	....	....	....
4.91	5.51	5.86	QNS	....	QNS	....	....	....	QNS	....	....	....	....	....	....
5.32	5.05	QNS	5.90	....	QNS	....	....	....	3.42	....	....	....	....	....	....
4.65	5.32	QNS	6.11	....	QNS	....	....	....	QNS	....	....	....	....	....	....
Case 6, Duodenal Ulcer															
....	....	....	....	QNS	....	....	....	....	....	QNS	....	....	QNS	....	....
....	....	....	....	4.52	....	....	....	....	....	7.26	....	....	6.65	....	....
....	....	....	....	5.55	....	....	....	....	....	5.70	....	....	5.95	....	....
....	....	....	....	4.55	....	....	....	....	....	3.61	....	....	4.38	....	....
....	....	....	....	QNS	....	....	....	....	....	QNS	....	....	QNS	....	....
....	....	....	....	QNS	....	....	....	....	....	QNS	....	....	QNS	....	....
....	....	....	....	QNS	....	....	....	....	....	QNS	....	....	QNS	....	....
....	....	....	....	QNS	....	....	....	....	....	QNS	....	....	QNS	....	....
....	....	....	....	QNS	....	....	....	....	....	QNS	....	....	QNS	....	....

* QNS = quantity not sufficient.

CONCLUSIONS

The titration for free hydrochloric acid in any study in which the question of anacidity is involved is inadequate and may give misleading results, especially in the patient who has had subtotal gastrectomy.

Titration of gastric contents will not detect low rates of gastric secretion; only measurement of pH values of the gastric contents will do so. These low rates of secretion are still of more than academic interest in the patient with subtotal gastric resection, especially when considered in terms of night secretion when the remaining gastric pouch is free of food for such a long period.

Shortly after subtotal gastric resection in the ulcer patient a varying degree of acid secretion persists, and only gradually do satisfactory pH levels of the gastric contents consistently appear. The period during which this change is taking place should be considered a potentially ulcer-producing period and treated as such, if the patient is to receive adequate medical management. No patient should be considered free of the dangers of a marginal ulcer until it can be demonstrated that the gastric contents remain above pH 5, the proteolytic neutralization point above which peptic digestion virtually does not occur.

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3. Ivy, A. C.; Grossman, M. I., and Bachrach, W. H.: Peptic Ulcer, Philadelphia, Blakiston Company, 1950, p. 807.

SEQUELAE OF RHEUMATIC FEVER IN MEN

FOUR TO EIGHT YEAR FOLLOW-UP STUDY

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Although the natural history of rheumatic fever in children is well documented, the literature contains few such studies of the disease in adults.[1] Knowledge of the course and late effects of rheumatic fever in adults could be of value for comparison with other studies in evaluating the results of new methods of treatment; in establishing physical standards for selection and utilization of men for military service; and in determining candidacy for discharge from the armed forces once the disease has occurred. The present report is based on a study of male veterans of World War II who had had an attack of rheumatic fever during military service and who were observed four to eight years after that attack.

In evaluating the sequelae of rheumatic fever in our series of veterans, the following aims were considered important: (1) to determine to what extent rheumatic heart disease is a sequel to rheumatic fever in adults; (2) to determine those prognostic factors that might influence the cardiac sequelae of rheumatic fever in adults; (3) to determine in adults the possible late effect of rheumatic fever on the joints; and (4) to determine the physical capacity of a group of adult patients several years after an attack of rheumatic fever, as well as any possible effect of the disease on their vocational or educational adjustments.

METHOD OF FOLLOW-UP STUDY

Diagnostic Criteria.—A diagnosis of rheumatic fever was considered verified and the patient was included in the study only if the following criteria, as modified from Jones,[2] were met. As evidence of an attack of rheumatic fever, the patient must have had at least one major manifestation (carditis, arthralgia or self-limited arthritis, subcutaneous rheumatic nodules, or chorea) and at least two minor manifestations (fever; abnormal results in laboratory tests [either elevated sedimentation rate, leucocytosis, anemia, or elevated antistreptolysin 0 titer]; epistaxis or purpura; erythemas, including erythema marginatum; pneumonitis).

It is possible that some patients could fulfill these diagnostic criteria and yet not have had rheumatic fever. That such patients might be included in this study we think unlikely for the following reasons: 1. In each instance there occurred articular manifestations that were almost always marked by acute polyarthritis, which responded dramatically to salicylates. 2. Carditis, as defined by the criteria stated later, was noted in 69 patients (51.1%). 3. Antecedent infection, presumably streptococcic, occurred in all but 18 of the 135 patients. This was usually designated as "sore throat," "pharyngitis," or "scarlet fever." Of the 18 patients who had had no known antecedent infection, 5 had carditis during the acute rheumatic attack, 3 more had rheumatic recurrences during the follow-up period, and 5 more showed evidence of rheumatic heart disease at the follow-up study.

Rheumatic carditis or heart disease was diagnosed by the presence of any of the following manifestations, either during the attack of rheumatic fever or at the time of the follow-up examination: cardiac enlargement; diastolic heart murmurs or systolic murmurs of grade 3 intensity (gradation of intensity: 1 to 6) or more; electrocardiographic abnormalities, chiefly disturbances in conduction and alterations of T waves; or pericardial friction rub or other evidence of pericarditis. A diagnosis of no heart disease was made in those patients who showed no evidence of cardiac abnormality at that particular time of observation. Grade 1 or 2 systolic murmurs were not in themselves regarded as indicative of carditis.

Selection of Patients.—The National Research Council, as part of its cooperative program of follow-up studies on veterans, prepared a sampling plan and selected for study 245 living veterans from a random-selected roster of 1,828 veterans who had been hospitalized for rheumatic fever during World War II. Of these selectees, 171 were enlisted men who were hospitalized in the period 1943 to 1945 and who had entered the Army from the western states comprising the 9th Service Command; actual selection was based entirely on geographical propinquity to San Francisco at the time of the follow-up study. The same basis of geographical location determined the selection of 67 patients (out of 481 admitted to Torney General Hospital during World War II), all of whom had been seen by one of us (E. P. E.) when they had rheumatic fever during military service. The remaining seven patients were obtained from a small roster of admissions of naval personnel to hospitals in 1944.

Medical records from military hospitals were made available through the Veterans Administration. Of the 245 patients selected for study, 22 were eliminated because the diagnostic criteria of rheumatic fever had not been fulfilled and 8 were eliminated because of inadequate records. Thus, the study group consisted of 215 patients with verified rheumatic fever. Of these 215 patients, 80 failed to appear in response to the request for their participation in this study. The remaining 135

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Dr. G. W. Beebe, statistician for the National Research Council, Dr. T. D. Jones, medical director of the Helen Hay Whitney Foundation, and Miss Vivien Blanchard, social service worker, assisted in the preparation and completion of this study.

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1. (*a*) Barber, H. S.: Rheumatic Fever in R.A.F.: Results of Treatment at Convalescent Centre, Brit. M. J. **2**: 83-84 (July 20) 1946. (*b*) Kimbro, R. W.: Report on 100 Cases of Rheumatic Fever in Young Adults, Texas State J. Med. **41**: 296-300 (Oct.) 1945.

2. Jones, T. D.: Diagnosis of Rheumatic Fever, J. A. M. A. **126**: 481-484 (Oct. 21) 1944.

patients were examined by us and constitute the subjects of this report. The 80 patients who did not appear were used as a comparison group, since medical information covering the period of military service was available on all of them and, for 69, the information covered periods of two to six years after the attack of rheumatic fever in adult life. Later analysis will show that the two groups were remarkably similar.

Characteristics of the Group.—Besides the fact that all the patients examined in this study had rheumatic fever in adult life, certain other characteristics were peculiar to the group. All were young men, of a median age of 22 years at the time of the follow-up study. With the exception of six Orientals and three Negroes, all were white. The great majority were Army enlisted veterans. Like all members of the armed forces, they had been screened to some extent, in that no one with obvious rheumatic heart disease had been inducted into the service. During most of the period covered by the follow-up study, all these men had lived in the western states, with 90% living in California.

There was no reason to believe that these patients had experienced an unusual form of rheumatic fever. All degrees of severity and chronicity of rheumatic fever were represented in this group. The onset of the disease occurred among these patients at all seasons and in many geographical areas. About the same basic treatment (bed rest and the use of salicylates until cessation of rheumatic activity) was received by each patient in the group. The duration of hospitalization, however, varied somewhat, depending on the progress of the individual patient. None of the patients received prophylactic treatment with sulfonamides or antibiotics after the acute illness.

Information concerning attacks of rheumatic fever prior to that in military service was obtained from three sources: medical records from military hospitals and from the Veterans Administration, the history obtained directly from the patient, and the history obtained by a social worker from family sources (in over one-half the cases). A history of rheumatic fever, of "inflammatory rheumatism," or of heart murmur was considered to indicate a previous attack, but the existence of "growing pains" or juvenile epistaxis was not so considered. Even with the most careful questioning, 103 patients gave no history of rheumatic fever prior to the age of 18 years. Such cases were presumed to represent instances of adult-acquired rheumatic fever. Ninety-eight of these patients had had rheumatic fever initially while in military service, while an additional five patients had had an initial attack of rheumatic fever prior to entering military service but after the age of 18 years. Thirty-two patients who had had one or more episodes of rheumatic fever prior to their illness in military service or their 18th birthday were classified as having recurrent childhood rheumatic fever.

The 135 patients examined were seen after periods ranging from 3 years and 11 months to 8 years and 2 months after the onset of rheumatic fever during military service. The average interval was 5 years and 9 months, or about 6 years. A few had had more than one attack of acute rheumatic fever during service; in such cases, the measured interval began with the first of such attacks.

Technique of Follow-Up Study.—The procedure for determining the residual effects of rheumatic fever in the 135 veterans consisted of (1) compiling a complete medical history, with special regard to evidence of rheumatic fever, both from the veteran and, when possible, from his family; (2) making a complete physical examination, with particular attention to the heart; (3) taking electrocardiograms, using standard, augmented limb, and unipolar chest leads; (4) examining the heart by fluoroscope and roentgen ray; (5) making a physical examination of the joints and routine roentgen ray examination of the sacroiliac joints; (6) making laboratory tests, including a complete blood cell count, determination of sedimentation rate, urinalysis, antistreptolysin O titer, and throat culture; (7) making special examinations and tests, such as roentgenograms of peripheral joints and measurements of venous pressure, circulation time, and vital capacity, as indicated in the individual patient; and (8) compiling a social and occupational history, covering in detail the veteran's postwar adjustment. Thirty-three of these patients had previously been examined by one of us (E. P. E.) during their illnesses in military service; this factor lent some consistency to the examinations. Examination of the heart was made with the patient in numerous positions and both at rest and after exercise, by two or more observers. In doubtful cases, a phonocardiogram was made. Evaluation of systolic murmurs was made according to the usual criteria—grade of intensity, location, duration, transmission, and variations with respiration and exercise.

RESULTS OF FOLLOW-UP STUDY

Examination of Heart.—Direct questioning of patients revealed a high incidence of symptoms referable to the heart. Fatigue was noted by 61 of the 135 patients during the follow-up period, precordial pain by 44, dyspnea by 39, and palpitation by 36. The majority of the patients with these complaints showed no evidence of rheumatic heart disease. In no instance when these complaints did occur in patients with rheumatic heart disease could the symptoms be explained on the basis of either active carditis or cardiac failure. Functional studies showed the circulation to be normal in these patients. Because of the disparity between subjective complaints and objective findings, it was concluded that many patients had become extremely "heart conscious."

Heart murmurs were found in 61 of the 135 patients. In 31 patients, these murmurs were considered to indicate valvular heart disease, with diagnoses distributed as follows: mitral insufficiency, 29; mitral stenosis, 6; aortic insufficiency, 9; and aortic stenosis, 6. Involvement of the mitral valve alone occurred in 19 patients, of the aortic valve alone in 2, and combined involvement of the mitral and aortic in 10. A diagnosis of mitral insufficiency alone was made in 16 cases, despite the absence of cardiac enlargement, on the basis of an apical, systolic heart murmur, grade 3 or more. This systolic murmur was located in the mitral area, was long in duration, and was frequently well transmitted to the axilla and base of the left lung. In the remaining 30 patients, the murmurs were systolic, grade 1 or 2 in intensity, localized within the cardiac apex or at the pulmonic area, of short duration, and disappeared at various stages of respiration,

position, or exercise. Such murmurs were not in themselves regarded as indicative of organic cardiac disease.

Electrocardiograms were made for 133 patients. In those of only five patients were abnormal patterns seen. Changes indicative of left ventricular hypertrophy were found in three patients who had murmurs of valvular heart disease and whose roentgenograms showed evidence of left ventricular hypertrophy. In two patients, the atrioventricular conduction time was 0.24 second and 0.33 second respectively. Inasmuch as a conduction defect had persisted in both patients since the attack of rheumatic fever during military service, this alteration was not interpreted as an indication of present active carditis, since there was no other evidence of active disease.

Fluoroscopic or x-ray examination was made of the hearts of 130 patients. Roentgenograms of 116 showed no abnormality. Of the remaining 14 patients, examination revealed cardiac enlargement in 3, and equivocal evidence of abnormalities, consisting of questionable prominence of one of the borders of the heart was found in the other 11. Four of these 11 patients had murmurs of valvular heart disease and 2 had grade 1 systolic murmurs, while the remaining 5 patients were entirely normal insofar as physical examination of the heart was concerned; none of the 11 showed an electrocardiographic abnormality. Fluoroscopic evidence of cardiac chamber enlargement was surprisingly infrequent in the 31 patients who showed physical signs of valvular heart disease. Cardiac enlargement was observed in only three of these patients, each of whom had combined mitral and aortic valvular disease. In 4 of these 31 patients such equivocal fluoroscopic findings as "questionable enlargement of the left auricle" or "slight prominence of the pulmonary artery" were found. In the remaining 24 patients with valvular heart disease fluoroscopic examination showed no cardiac abnormality.

TABLE 1.—*Manifestations of Rheumatic Heart Disease in Thirty-Two Patients Examined Four to Eight Years After Initial Attack of Rheumatic Fever*

Murmurs of Valvular Heart Disease	No. of Patients	Electrocardiogram Abnormal	Roentgenogram Abnormal
Mitral insufficiency	16	..	..
Mitral insufficiency and stenosis	3	..	..
Aortic insufficiency	1	+	+
Aortic stenosis	1	..	..
Mitral insufficiency and stenosis, aortic insufficiency	2	..	..
Mitral insufficiency, aortic stenosis and insufficiency	2	+	+
Mitral insufficiency and stenosis, aortic insufficiency and stenosis	1	+	+
Mitral insufficiency, aortic stenosis	2	+	..
Mitral insufficiency, aortic insufficiency	3	..	..
No murmur	1	+	..

Incidence of Rheumatic Heart Disease.—Thirty-two (23.7%) of the 135 patients were judged to have definite rheumatic heart disease, the various manifestations of which are noted in table 1. In all but five, the manifestations were limited to heart murmurs. Three patients had organic murmurs, coexisting with electrocardiographic and roentgenographic abnormalities; one patient had an organic murmur and persistent atrioventricular block; and one patient had persistent atrioventricular block without other evidence of heart disease.

The remaining 103 patients appeared to have no heart disease at the follow-up study. Thirty of these patients had grade 1 or 2 systolic heart murmurs; equivocal roentgenographic evidence of abnormalities was found in 2 of these 30 patients, and electrocardiograms showed abnormalities in none. As mentioned previously, 98 patients had had the initial attack of rheumatic fever during military service. The incidence of heart disease in this group of 98, when considered separately, was 18.4% (18 patients), or below that for the entire group.

TABLE 2.—*Comparison of Cardiac Status of 135 Veterans Examined*

At Time of Attack of Rheumatic Fever		At Time of Follow-Up Study: Rheumatic Heart Disease	At Time of Follow-Up Study: No Heart Disease
Patients with carditis	69	31	38
Pathological murmurs alone	20	19	1
Pathological murmur and abnormal EKG	14	11	3
Abnormal EKG alone	35	1	34
Patients without carditis	66	1	65
Total	135	32	103

Prognostic Factors Influencing Cardiac Sequelae.—Sixty-nine of the 135 patients in the study were considered to have had rheumatic carditis during the acute attack of rheumatic fever. For 31—all but one of the entire number with residual heart disease—of these 69 patients with carditis, the diagnosis of rheumatic heart disease was made at the follow-up study (table 2).

Significance of Carditis: Significant heart murmurs and electrocardiographic abnormalities were the commonest signs of carditis during the acute illness. (A few patients had more than one attack of acute rheumatic fever during military service; in such cases, the signs of carditis referred to herein are those observed during the first of such attacks.) Pericarditis and cardiac enlargement did not occur independently of either of the former signs. The relationship between the most frequent signs of carditis during acute rheumatic fever and the cardiac status at the time of the follow-up examination is shown in table 2. It will be noted that of the 34 patients who had pathological murmurs during the acute illness, a high proportion, 30 patients, were classified as having rheumatic heart disease at the follow-up examination. Electrocardiographic evidence of carditis during the acute illness was present in 49 patients; in 35, electrocardiographic abnormalities were the sole evidence of carditis. Only one of these 35 patients had any evidence of carditis at the follow-up study, and this was manifested by persistent first degree atrioventricular heart block.

Of the 66 patients classified as showing no carditis at the time of rheumatic fever during military service, only one showed definite rheumatic heart disease at the follow-up examination. In this exceptional patient, an apical systolic murmur that had been classified as grade 1 during the acute illness was classified as grade 3 and

indicative of a valvular lesion at the follow-up examination. In no other instance did a patient whose cardiac findings had been limited to grade 1 or 2 systolic murmurs at the time of the acute attack show definite evidence of rheumatic heart disease at the follow-up examination. Of the 46 patients whose cardiac findings had been limited to grade 1 or 2 systolic murmurs at the time of the military illness, 25 continued to show these murmurs at the follow-up examination, while in 20 these murmurs could no longer be heard.

In patients with evident heart disease at the end of the attack of rheumatic fever in military service, changes in cardiac status during the subsequent four to eight years were neither frequent nor of great degree. Regressive changes in physical signs of heart disease were at least equal to progressive changes. Six patients showed regressive changes. Diastolic murmurs disappeared in two (one aortic and one mitral); a pathological systolic murmur disappeared in another. In three patients, systolic murmurs that had been regarded as indicative of valvular heart disease at the termination of the acute illness could no longer be classified as such at the follow-up examination. In addition, in two patients who had had severe carditis and whose hearts had appeared to be in congestive failure at the time of the acute attack, the signs and symptoms of congestive failure disappeared after the active carditis subsided and did not recur during the intervening years. Conversely, new pathological murmurs developed in four patients, aortic systolic murmurs in two, and mitral diastolic murmurs in two. Changes in the roentgenographic appearance of the heart in electrocardiographic tracings were not remarkable. In the three patients who showed both roentgenographic and electrocardiographic evidence of left ventricular hypertrophy, the abnormality had been present, but in lesser degree, during their illness in military service. In two other patients who had atrioventricular block when examined at the follow-up study, the abnormality apparently had persisted since the time of the attack in military service.

Rheumatic Recurrences: Evidence of a clinical recurrence of rheumatic fever during or after the period of active military service was obtained from military medical records or from records of the Veterans Administration or private physicians. The same criteria used to establish the occurrence of an initial attack were utilized to judge a recurrence. The rate of recurrent attacks for the entire series of 135 patients was low. Fifteen patients (11%) experienced 17 recurrences of rheumatic fever in the interval between the first acute illness during military service and the follow-up study. In 9 of the 15 patients, the first recurrence took place within a year of the attack during military service, often while the man was still on active duty. In the remainder of the patients, the first recurrence took place during the first four years following the attack. Of the 15 patients who had recurrences, only one showed any progression of heart disease; this was evidenced by a new mitral diastolic murmur at the follow-up examination.

Results of Examination of Joints.—Soreness and stiffness of joints, noted for as long as six years after apparent recovery from the attack of rheumatic fever in military service, were described by 89 patients (66%). These articular symptoms, marked by frequent exacerbations and remissions, usually lasted days or weeks and then disappeared for varying intervals of time. They were most evident in the early morning and after physical inactivity; they were generally mild in degree but were aggravated by inclement weather. These symptoms were usually relieved by salicylates and application of heat locally. Physical examination of the joints of the 135 patients disclosed no abnormalities. A minor degree of tenderness of painful joints was noted in five patients, but no significant objective abnormality of the joints was evident. Films of the peripheral joints involved in these patients were uniformly normal. Routine films of the sacroiliac joints of 115 patients were taken. Positive evidence of rheumatoid spondylitis, manifested by typical alterations in both sacroiliac joints, was found in three patients.

Other Factors Influencing Present Status.—In most of the 135 patients, the results of laboratory tests were normal or borderline. In 34 patients, the sedimentation rate (Wintrobe) was over 10 mm. in one hour, but in only 8 of these patients was it elevated above 20 mm. The hemoglobin value was less than 12.5 gm. per 100 cc. in three patients; the lowest value was 11.5 gm. per 100 cc. White blood cell counts in excess of 10,000 per cubic millimeter were found in 27 patients, but a count of over 11,000 cells was noted in only 13. The maximum white blood cell count was 15,300 per cubic millimeter. Urinary abnormalities were discovered in 14 patients, one of whom had chronic glomerulonephritis and three of whom had diabetes mellitus. In the remaining 10 patients, orthostatic albuminuria or urogenital infections were considered the cause of abnormality in test results. Single throat cultures were made of specimens taken from 126 patients; in 16 instances, the cultures were positive for beta hemolytic streptococci. Antistreptolysin O titers obtained for 104 patients were elevated to a significant degree in only seven instances.

TABLE 3.—*Similarities Between Group Examined and Patients in Comparison Group* *

Characteristic	Examined Group, 135 Patients		Comparison Group, 80 Patients	
	No.	%	No.	%
Adult rheumatic fever	103	76	58	72.5
Recurrent childhood rheumatic fever	32	24	22	27.5
Median age at time of attack during military service, yr.	22		22	
Clinical manifestations of attack during military service				
Arthralgia and/or arthritis	135	100	80	100.0
Carditis	69	51.1	35	43.8
Abnormal laboratory findings	121 †	96	79	99.0
Length of interval before follow-up study, average no. of years	5.7		3.3 ‡	
No. of patients who had recurrences during interval before follow-up study	15	11	6 ‡	11.5
Incidence of residual rheumatic heart disease	32	23.7	16 (estimated)	20.0

* All patients studied were men.
† From group of 126 patients on whom information was obtained.
‡ Based on 69 patients—in 11 cases no information was available after recovery from attack during military service.

No distinct correlation was noted between positive results in throat cultures and elevation of antistreptolysin titer.

The same criteria used to confirm the original diagnosis of rheumatic fever were applied to determine current rheumatic activity at the time of the follow-up study. Despite the fact that 89 patients had experienced recurrent discomfort in or about the joints during the follow-up interval, only five patients complained of painful joints at the time of examination. None of these five patients showed abnormal physical signs referable to the joints, fever, subcutaneous nodules, or elevation of sedimentation rate or other laboratory abnormalities. In the entire group of 135 patients, electrocardiographic evidence indicative of active carditis was absent, except in two patients in whom first degree heart block appeared to be a permanent change. Roentgenologic abnormalities, except in well-established cases of valvular heart disease, also were absent. In cases in which laboratory tests gave abnormal results, most of which could be ascribed to other causes, there existed no additional evidence of active rheumatic disease. Thus, it was concluded that no patient in our series had active rheumatic fever at the time of study.

TABLE 4.—*Incidence of Rheumatic Heart Disease in Children and Adults After Attack of Rheumatic Fever*

Series	Subjects	Cases, No.	Interval After Attack, Yr.	Subjects with Rheumatic Heart Disease, %
Kaiser, 1943 [3d]	Children	1,240	Variable	64
Schlesinger, 1938 [3b]	Children	1,000	4-5 (average)	74.2
Ash, 1936 [3c]	Children	414	7.5	66
Bland and Jones, 1938 [3a]	Children	1,000	10	68.6
Brown and Wolff, 1940 [3e]	Adolescent group	175	7	51
Kimbro, 1946 [1b]	Adults	93	End of illness	17.2
Barber, 1946 [1a]	Adults	65	4	18.5
Present series, 1954	Adults	135	4-8 (average 5.7)	23.7

Physical Capacity and Vocational Adjustment.—At the time of the follow-up study, none of the 135 patients was seriously disabled from the effects of rheumatic fever. of the total group, 107 patients (80%) were leading normally active lives. Fifteen patients were restricted only by having to avoid competitive sports and arduous physical labor. Ten additional patients had experienced some loss of time from work because of excessive fatigue or arthralgia; all of these 10 men had valvular heart disease and many of them had been restricted in their activities previously. Only three patients were disabled; in each instance the disability was due to an intercurrent disease—a brain tumor in one patient and tuberculosis in two. Other intercurrent conditions, not causing physical incapacity, were diabetes mellitus, three patients; rheumatoid spondylitis, three; chronic glomerulonephritis, one; psychopathic personality, three; and psychoneurosis, two. Ninety-five per cent of the veterans were employed or were attending school. The remaining 5% were unemployed either because of a disabling disease other than rheumatic fever or because of a neuropsychiatric disorder.

3. (*a*) Bland, E. F., and Jones, T. D.: Delayed Appearance of Heart Disease After Rheumatic Fever, J. A. M. A. **113**: 1380-1383 (Oct. 7) 1939. (*b*) Schlesinger, B.: Public Health Aspect of Heart Disease in Childhood, Lancet **1**: 593 (March 12) 1938. (*c*) Ash, R.: Prognosis of Rheumatic Infection in Childhood: Statistical Study, Am. J. Dis. Child. **52**: 280-295 (Aug.) 1936. (*d*) Kaiser, A. D.: Factors That Influence Rheumatic Disease in Children: Based on Study of 1,200 Rheumatic Children, J. A. M. A. **103**: 886-892 (Sept. 22) 1934. (*e*) Brown, M. G., and Wolff, L.: Recovery from Acute Rheumatic Fever Without Permanent Cardiac Damage, New England J. Med. **223**: 242-243 (Aug. 15) 1940.

COMMENT

Similarity of Patients Examined and Patients in Comparison Group.—The nature of the sample is of prime importance in a study of this kind. Unless there is a definite proof that the sample is unbiased, the validity of the conclusions is questionable. A comparison of the 135 patients who were examined and the 80 patients on whom records alone were available indicated that our sample was not biased. It disclosed a remarkable similarity in the two groups in age, sex, incidence of attacks of rheumatic fever, clinical manifestations at time of attack, and residual effects at the latest period of observation (table 3). The most striking similarity in the two groups, however, was in the incidence of carditis at the time of the attack during military service and the evidence of rheumatic heart disease at the latest period of observation. At the time of the attack during military service, carditis occurred in 51.1% of the examined patients and in 43.8% of the patients in the comparison group. Rheumatic heart disease at the latest period of observation was found in 23.7% of patients in the former group and in an estimated 20% of patients in the latter group.

In the comparison group, the follow-up period was shorter (3.3 years) than in the examined group (5.7 years), and in 11 patients of the comparison group only the cardiac condition at the termination of the attack of rheumatic fever in military service was known. Since progressive or regressive changes were not demonstrated to be common after the end of the attack of rheumatic fever, these differences in time of subsequent observation were not considered to have affected materially the estimated incidence of residual heart disease. Because of this close correlation between the examined and comparison groups, it is believed that the 135 patients who were examined were representative of veterans who had had rheumatic fever during military service and who were now living on the West Coast.

Comparison Between Childhood and Adult Rheumatic Fever.—Although studies of rheumatic fever in adult patients are few, follow-up reports of the disease in children, on large series of cases and covering varying periods of time, have been numerous.[3] Estimates based on these studies show that in about 60% of children with rheumatic fever rheumatic heart disease develops during an interval comparable to the average follow-up period of 5.7 years in our series (table 4).

The incidence of residual heart disease in the present study was remarkably low. In our group of 135 male adults, rheumatic heart disease developed in 23.7%. Among the 98 patients whose initial attack of rheumatic fever occurred in military service, only 18.4% later had heart disease, an incidence that corresponds to that re-

ported in other studies of rheumatic fever in adults.[1] It is possible that these figures have been influenced favorably by the fact that the subjects of each of the studies of adults, including our own, have been exclusively male. It is said that the rate of recurrences of rheumatic fever and the frequency of certain valvular sequelae of rheumatic fever, such as mitral stenosis, are lower among men than among women.[4] Nevertheless, there is ample evidence from other sources that emphasizes the relationship of age to the prognosis in rheumatic fever. After an attack of rheumatic fever, the incidence of cardiac damage at the time of discharge from the hospital was four times greater in children under 12 years of age than in adult patients over 25 years old, according to De Liee [5]; six times greater in children under 10 years of age than in patients over 40 years old, according to Church [6]; and two times greater in children under 15 years of age than in patients over 25 years old, according to Mackie.[7]

These studies support the conclusion that rheumatic heart disease is far more likely to develop if the initial attack of rheumatic fever occurs in childhood than if it occurs in adult life. The reason for the increased vulnerability of the heart during childhood is not apparent. As White stated, "The older the individual the more the joints suffer and the less the heart; the younger the subject, the more the heart suffers and the less the joints." [8]

TABLE 5.—*Mortality Among Group of Children and Adults After Rheumatic Fever*

Series	Subjects	Cases, No.	Interval Before Follow-Up, Yr.	Mortality of Group Discovered at Time of Follow-Up, %
Dublin and Marks, 1943 [10]	Children	...	3	8.1
Schlesinger, 1938 [8b]	Children	1,000	4-5 (average)	12.3
Bland and Jones, 1936 [11c]	Children (under 21)	983	5-8	24.3
Ash, 1936 [8c]	Children	414	7.5	22.0
Ash, 1948 [11d]	Children	537	10	28.1
Wilson and Lubschez, 1948 [11e]	Children	1,042	14.8 (average)	21.7
Present study, computed from sample from which study was drawn	Adults	1,828	5	1.7

Information regarding the comparative mortality of rheumatic fever in children and adults is meager. From 1942 through 1945, the reported case fatality rate in Army and Navy servicemen during an acute attack of rheumatic fever was 0.24 per 100 hospital admissions.[9] The exact percentage of deaths due to an acute attack in other adults is not known. Estimates of the case fatality rate in surveys on children have varied from 1 to 13 per 100 hospital admissions.[10] Comparison of these figures indicates that the chance of immediate survival is more favorable when the initial attack of rheumatic fever occurs during adult life than when it takes place during childhood. The comparative survival of children and adults for a given number of years after the acute attack has subsided has not been established with certainty. Numerous studies of rheumatic fever in children have reported the survival rate over various periods.[11] Synthesis of these figures indicates that 10 to 20% of children die during the first five years following the initial attack (table 5).

Accurate information on the survival of adult patients over a similar period is lacking, but during the course of our study certain fragmentary information became available that may be of value. Among the 1,828 cases identified by the National Research Council preparatory to choosing the present study sample, 31 deaths had occurred within the first 5 years after the attack of rheumatic fever during military service.[9] Most of the deaths were from trauma, including that of battle, but eight deaths were attributed specifically to rheumatic heart disease. In five years then, 1.7% of the 1,828 patients died from all causes, including war deaths, but relatively few as a consequence of rheumatic heart disease. Even though the evidence is largely based on estimates, comparison between adults and children indicates that the rate of survival during a five year period after acute rheumatic fever is considerably higher in adults.

Evaluation of Prognostic Factors Influencing Cardiac Sequelae.—Remarkably few changes could be demonstrated in the cardiac status of the subjects of this study during the four to eight year interval between the termination of the military attack of rheumatic fever and the follow-up study. With only one exception, hearts that had been regarded as normal at the termination of the acute attack of rheumatic fever were still normal at the follow-up examination. The stability of the cardiac status was further demonstrated by the fact that few changes had occurred in patients in whom residual heart disease could be diagnosed after recovery from the acute illness.

Recurrent attacks during the follow-up period were so few in the 135 patients examined (17 recurrences in 15 patients, of whom one showed progression of heart disease) that no definite conclusion could be drawn concerning their effect on the cardiac sequelae of rheumatic fever. It is of course possible that the residence in California of most of our patients since their discharge from military service, as well as the exclusion of females from our series, minimized the rate of recurrence of rheumatic fever.[4]

On the basis of this study, serious prognostic significance could not be attached to the grade 1 or 2 systolic

4. Jones, T. D.: Personal communication to the authors.

5. DeLiee, E. M.; Dodge, K. C., and McEwen, C.: Prognostic Significance of Age at Onset in Initial Attacks of Rheumatic Fever, Am. Heart J. **26**: 681-684 (Nov.) 1943.

6. Church, W. S.: Rheumatic Fever, in Allbutt, T. C., and Rolleston, H. D.: System of Medicine, London, Macmillan & Co., Ltd., 1909, vol. 2, p. 594.

7. Mackie, T. T.: Rheumatic Fever: Analytical Study of 393 Cases of Rheumatic Fever and 89 Cases of Chorea, Am. J. M. Sc. **172**: 199-221 (Aug.) 1926.

8. White, P. D.: Heart Disease, ed. 4, New York, the Macmillan Company, 1951, p. 371.

9. Beebe, G. W.: Personal communication to the authors.

10. Dublin, F. I., and Marks, H. H., cited by Paul, J. R., and others: Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects, ed. 2, New York, Metropolitan Life Insurance Company, 1943, p. 133.

11. Footnotes 3*a*, *b*, and *c*. Dublin and Marks.[10] Bland, E. F., and Jones, T. D.: Natural History of Rheumatic Fever and Rheumatic Heart Disease, Tr. Am. Clin. & Climatol. A. (1936) **52**: 85, 1937. Ash, R.: First 10 Years of Rheumatic Infection in Childhood, Am. Heart J. **36**: 89-97 (July) 1948. Wilson, M. G., and Lubschez, R.: Longevity in Rheumatic Fever Based on Experience in 1,042 Children Observed over a Period of 30 Years, J. A. M. A. **138**: 794-798 (Nov. 13) 1948.

murmurs that were heard during the acute attack of rheumatic fever. On the other hand, the presence of a significant heart murmur was a most sensitive prognostic sign of heart disease. With only two exceptions, all patients who had rheumatic heart disease at the follow-up study had been judged to have murmurs indicative of valvular disease during the attack of rheumatic fever. Transient electrocardiographic abnormalities, either alone or in combination with other manifestations of carditis, did not appear to have any prognostic value. In each of the patients in whom acute carditis had been manifested solely by transient electrocardiographic abnormalities, the cardiac status was normal at the follow-up study, while among those patients in whom such changes had occurred in conjunction with significant heart murmurs, it was the murmur that was significant in prognosis. Cardiac enlargement and pericarditis were of great prognostic significance when they occurred, but, in this series of patients, they did not occur independently of pathological heart murmurs.

Evaluation of Articular Sequelae.—Soreness and stiffness of joints after rheumatic fever in adults have been described previously, but their persistence in as many as two-thirds (89) of the subjects of this study for as long as six years was unexpected. In no instance were there physical signs or other evidence of active rheumatic fever or rheumatoid arthritis to explain these symptoms, which were influenced by such external factors as weather and physical activity. The consistent pattern of the symptoms makes it unlikely that they were due to psychosomatic causes or to malingering. Although they resembled those of so-called fibrositis, the precise cause of these articular complaints is unknown. In general, they appeared to be of little consequence either in the matter of disability or in prognosis.

It had been thought that some patients given the diagnostic label of rheumatic fever might actually have been examples of atypical, "episodic" rheumatoid arthritis, which goes into remission but which, in time, relapses and progresses to a more typical form of rheumatoid arthritis. That this was not the case is shown by our failure to demonstrate in this group of patients a single instance of rheumatoid disease of the peripheral joints.

Of interest was the discovery, by routine x-ray examination of the sacroiliac joints, that three patients had unequivocal radiological evidence of bilateral sacroiliitis, an x-ray finding that is fairly diagnostic of rheumatoid spondylitis. All three patients had had evidence of carditis during their attacks of rheumatic fever in military service; two had residual rheumatic heart disease at follow-up, manifested in one by combined valvular heart disease and in the other by persistent atrioventricular block. Each of these three patients had had a self-limiting peripheral arthritis during the attack of rheumatic fever, and none had any abnormalities of peripheral joints at follow-up. There was no evidence to suggest that the onset of the spondylitis and rheumatic fever was simultaneous; two of the patients showed roentgenographic evidence of rheumatoid spondylitis at the time of the attack of rheumatic fever in military service, indicating preexisting spondylitis.

Social Adjustment of Patients.—The social adjustment of the group as a whole was good. Since little serious disability was found in the group, it was not surprising to discover that the majority of men had made adequate adjustments in regard to education, jobs, marriage and family life, and recreational activities. Those who had been medically advised to alter their vocation had done so satisfactorily in most cases. Most important in determining the adjustment of the patient to the disease was the attitude taken by the patient toward his illness. The best social adjustment was seen in those men who had accepted the illness with optimism and who tended to minimize any handicap. Those patients who had met the illness with pessimism, depression, or negation were found to be overemphasizing their disability and making the poorest adjustment. Because an optimistic attitude augured for better social adjustment, it would appear that, in addition to extensive physical rehabilitation, attempts should be made at the time of illness to encourage optimism in patients and to avoid overemphasis of any possible or expected disability.

SUMMARY

Rheumatic heart disease as a sequel to rheumatic fever in adults was found in 32 patients, or 23.7% of the 135 men who were the subjects of this study. Only 18.4% of the 98 veterans who had had an initial attack of rheumatic fever during military service showed residual heart disease. This incidence is well below that reported for children and furnishes confirmatory evidence that the prognosis is relatively more favorable when rheumatic fever first occurs during adult life. The cardiac status of these patients was remarkably stable during the interval between the termination of the acute illness during military service and the follow-up examination. After an attack of rheumatic fever in adult life, the vast majority of these patients were able to resume normal lives. Ninety-five per cent were gainfully employed or in school at the time of the follow-up study. No instance of serious disability due to the sequelae of rheumatic fever was observed.

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Explosive Decompression.—An ever-present hazard in pressurized aircraft, both military and commercial, is that of sudden or explosive decompression. Pressurized aircraft, such as the Constellation, is stressed to withstand a pressure differential of 6.5 lb. per square inch. This would permit flight at 30,000 ft. with an internal pressure equivalent of 8,000 ft. If a large military aircraft, flying at 30,000 ft., were suddenly depressurized by enemy action, the pilot, if he had oxygen available, could carry on, but other crew and passengers without oxygen would retain useful consciousness for about two minutes. If no oxygen were available, crew and passengers would become unconscious within a matter of minutes and death might ensue within a period of 8 to 10 minutes. Hence, commercial planes, in which explosive decompression might occur as a result of the breaking of a window, failure of turbos, or explosion of an observation dome, are not permitted to fly above 22,000 to 24,000 ft., since a large plane cannot descend rapidly enough to insure consciousness of the occupants, especially of the crew.—J. F. Fulton, M.D., Medicine, Warfare, and History, *United States Armed Forces Medical Journal*, December, 1953.

THE PROBLEM OF EVALUATING TREATMENT OF PROTRUDED LUMBAR INTERVERTEBRAL DISK

OBSERVATIONS OF RESULTS OF CONSERVATIVE AND SURGICAL TREATMENT IN 429 CASES

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Sciatica has been described for generations. In 1864 Lasègue [1] wrote concerning the protective flexor position of the involved lower extremity. However, it was not until 1934 that Mixter and Barr [2] documented their observation, now accepted as established fact, that herniation of the fourth lumbar and lumbosacral disks is a common cause of sciatica. A review of the criteria for diagnosis of a protruded lumbar intervertebral disk is not within the province of this paper. Variation of opinion on the indications for conservative (nonsurgical) and surgical therapy and differences in reported results of treatment evince the need for further observations. When more than one treatment is available for a disease, and when one of the methods is an elective surgical procedure, the physician should be prepared to discuss the relative advantages and disadvantages of each method. Because of the practical need for knowledge about the comparative results of conservative and operative treatment of this condition, it was decided to undertake a long-time follow-up study of two groups of patients: (1) those treated conservatively and (2) those treated surgically (with or without fusion of the involved area of the spinal column).

A widely accepted technique for deciding which of several methods of treatment for the same disease is the best is to compare the results of each therapy when applied to similar groups of patients; another method of appraisal is to determine whether, in a given disease, a certain remedy produces a result statistically more favorable than that observed in patients receiving no treatment at all. Unfortunately, many authors who have discussed protruded lumbar intervertebral disk have recorded observations concerning only surgical therapy. When comparison of methods is not available, a satisfactory decision between types of management cannot be made. Another problem in the evaluation of a treatment has to do with the criteria for the designation of responses as excellent, good, fair, and so forth. Does the term excellent mean relief of all symptoms under all conditions, or does it except certain circumstances? Is the word relief defined as "easing or giving partial comfort" and confusion then compounded by the use of terms such as partial relief or incomplete relief? Is judgment based on examination of the patient, questions, a questionnaire, or a combination of these methods? How are the questions worded? Is the patient asked, "Is your pain somewhat better than before the operation?" or "Is your pain better or worse than before the operation?" or "Are you glad you had the operation?" By whom are the questions asked—an orthopedic surgeon? a neurosurgeon? It is difficult for a father to render dispassionate judgment on his son!

MATERIAL AND METHOD

A clinical diagnosis of protruded intervertebral disk in the lumbar region was recorded by the staff neurologist for each of 503 patients seen between 1939 and July, 1947. Operations were performed on 349 of these patients. All patients were treated three or more years before the follow-up study was done. A total of 429 patients, including 329 surgically treated and 100 conservatively treated, were followed. Surgical exploration revealed no disk protrusion in 6.6% of cases (table 1). As clinical experience accumulated the number of errors in diagnosis decreased, so that the error for the 149 cases observed from 1945 to 1947 was 2.7%. The 23 instances in which the diagnosis was incorrect are of particular interest, as 10 patients of this group had pain extending only to the knee, 21 had equal Achilles tendon reflexes, and 20 had no stiffness of the low back; caution should be used in advising surgical treatment if these abnormalities are not present in the history or the physical examination. Identical criteria for diagnosis were applied to the control group of conservatively treated patients and to the patients treated surgically.

Treatment.—Conservative treatment consisted of absolute rest in bed for 10 to 14 days, during which time physical therapy in the form of heat and massage was administered, together with analgesics to make the patient relatively comfortable. When the patient was dismissed from the hospital, he was instructed to sleep on a hard bed and to avoid sudden twists or strains of the low back. Particular emphasis was placed on teaching the patient to keep the back straight when lifting; not to flex the spinal column, but to squat when lifting, so that the massive thigh muscles would do most of the work. In some instances the patient was fitted with a spring back brace. Surgical exploration of one or more lumbar intervertebral spaces was done by means of a laminectomy, a hemilaminectomy, or an interlaminar approach. A considerable portion of disk substance was removed as well as the protruded segment. Spinal fusion was performed in 49 cases.

Follow-Up Study.—Some patients were recalled to the hospital, where an interval history and physical examination were recorded and a questionnaire was filled out; the questionnaire was sent to other patients. The questionnaire was constructed in a particular attempt to make the replies objective. The form sent to the surgically treated patients follows.

1. Place an X in front of one of the following statements that most nearly fits your case at the present time.

____My low back pain is completely gone, and my back is as well as ever.

From the Department of Neurology, State University of Iowa, Iowa City.

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1. Lasègue, C.: Considérations sur la sciatique, Arch. gén. de méd. **2**: 558-580 (Nov.) 1864.

2. Mixter, W. J., and Barr, J. S.: Rupture of Intervertebral Disc with Involvement of Spinal Canal, New England J. Med. **211**: 210-215 (Aug. 2) 1934.

____I still have some low back pain. I have to be careful of my back to avoid straining it.

____I still have considerable low back pain and I have to be very careful of my back.

____I have just as much or more low back pain as before the operation.

2. Place an X where it correctly belongs.

____My hip and leg pain is completely gone and my leg is as good as ever.

____I still have some hip and leg pain.

____I still have considerable hip and leg pain. I have to be very careful of myself.

____I have just as much hip and leg pain as before the operation.

3. Have you returned to your former occupation? _____ If not, please explain.

4. State your working capacity in the percentage that most nearly fits your case. If some different condition such as heart trouble, for example, has incapacitated you, please estimate what you would be working if the independent condition were not present. I can work 100%____; 75%____; 50%____; 25%____; 0%____ of what I worked before my illness. (100% means full time work, 50% would mean half time work, etc.)

In the questionnaires given to patients treated by the conservative method, the first four questions were similar to those listed above, with the word "operation" changed to "treatment in the hospital"; additional questions concerned other types of treatment used after dismissal from the hospital, including surgical therapy elsewhere, and the number of subsequent attacks. Particular emphasis is placed on the responses concerning working capacity. In evaluating results of treatment it must be remembered that estimates of pain are highly subjective, and therefore valid comparisons of them are almost impossible. Difference in the pain thresholds of subjects is a well-known phenomenon. Although he may continue to complain of pain, the return of a previously incapacitated patient to full-time work implies the occurrence of definite improvement. The questionnaires revealed that 62% of the conservatively treated patients returned to their former occupations and 39% were working full time. These two groups do not completely overlap. Only 2% were unable to work at all. The corresponding percentages for patients who underwent operation were slightly higher than in the control group. The 4% of patients treated surgically who were unable to work included several patients in whom an operation was performed early in the series and damage to nerve roots caused the inability to work. The conservatively treated and surgically treated groups were similar in age, sex, occupation, and severity of illness. Those in the former group declined operation for personal reasons or were having a first attack that responded favorably to conservative measures. As separate tabulation of results for patients in whom spinal fusion was performed revealed no difference between this group and the other surgically treated patients, the former are included in the 329 surgically treated patients studied.

TABLE 1.—*Normal Findings in Patients Operated on*

Year	No. of Patients	Normal Findings
1939	42	3
1940	34	4
1941	33	4
1942	32	3
1943	28	3
1944	31	2
1945	75	2
1946	44	1
1947	30	1
	349	23 *

* Average diagnostic error 6.6%.

TABLE 2.—*Patients' Statements of Results of Therapy* *

Results	% of Cases: Surgical Treatment	% of Cases: Conservative Treatment
Back pain satisfactory	83	78
Leg pain satisfactory	83	78
Former occupation	68	62
75% working capacity or more	74	68
Former job, 100% capacity	50	30
Recurrence of definite attacks	5	60
Subsequent operation	2.8	10

* From questionnaires given to 329 patients treated surgically and 100 patients treated conservatively.

In table 2, the word satisfactory is applied to patients who selected the first or second choice in items 1 and 2 of the questionnaire. There is no marked difference between the two groups for the first four items tabulated, but a definite difference does exist in two other items. Only 30% of conservatively treated patients were able to return to their previous occupations at 100% capacity, while 50% of the patients who underwent operation did so; 60% of conservatively treated patients had recurrence of definite attacks, whereas 5% of those surgically treated had recurrence. This difference is partly reflected in the incidence of patients subsequently requiring operation, 2.8% for the surgically treated group and 10% for the conservatively treated group.

Analysis of data on surgically treated patients who reported a fair or poor result revealed that (*a*) there was a massive functional component to the complaint; (*b*) the patient was having a mild first attack; (*c*) there were no physical signs of a radicular syndrome, but only a history of sciatica; or (*d*) the patient was in a remission at the time of operation. Best results were obtained when the protruded disk was removed during the time when the patient was having acute discomfort.

SUMMARY AND CONCLUSIONS

A follow-up study comparing and evaluating results of two types of therapy in 429 patients with a protruded lumbar intervertebral disk showed that in two respects, ability to return to the former occupation full time and the number of attacks occurring after treatment, surgical treatment was more effective than conservative treatment.

In most cases surgical removal of a protruded lumbar intervertebral disk is an elective procedure; that is, there is no gross impairment of motor, sensory, or vesical function. Before advising elective operation, it is wise to discuss frankly with the patient the results of both operative and conservative treatment. Some knowledge

of the percentages listed in table 2 will enable the physician to give partially objective answers to the patient's questions. Surgical treatment is probably indicated in the following instances: when there is progressive paralysis or sensory loss; when an extremely severe, protracted attack of sciatica does not respond to conservative treatment; when there are repeated attacks of sciatica with the production of considerable incapacity; when there is failure to improve during an adequate trial of conservative treatment; or when the patient cannot afford, for economic reasons, to continue conservative treatment for an indefinite period of time.

BLOOD GROUPING TESTS IN DISPUTED PATERNITY PROCEEDINGS

STUDIES WITH A-B-O, M-N, AND Rh-Hr FACTORS

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The value of blood grouping in the solution of medicolegal problems has been firmly established. The pioneer work of Landsteiner [1] in the early part of the century, continued by Wiener [2] in this country and Andresen in Europe,[3] has led to universal acceptance of the immutability of a person's blood type. The laws governing the inheritance of the characteristics that determine the blood type have been proved by thousands of family studies. These characteristics are not influenced by diet, age, disease, or other environmental factors.[4] In addition, the laboratory methods for determining the various blood groups are clear and sharp. In the hands of qualified experts, the findings are always reproducible.

In forensic medicine, the most important areas for blood grouping tests are in the identification of blood stains and in the exclusion of parentage. To date more than 40,000 cases involving paternity have been studied in applying these tests. Illegitimacy or technical errors have proved the only exceptions to the expected results except in a single case of multiple congenital defects. The essential accuracy of the theory of inheritance of blood groups as well as the reliability of the technique of blood group determination is thus attested.

In the United States, an exclusion based on blood tests is decisive in New York, Maine, and New Hampshire. In other states (New Jersey, Wisconsin, Ohio, Maryland, South Dakota, North Carolina, Pennsylvania, and Rhode Island) the courts can order blood tests when indicated. In the remaining states the tests can be ordered under general law and the results are admissible as evidence.[5] Blood testing, it must be understood, is of value only in a negative way; that is, the expert can only state that the test excludes paternity or that the blood stain is not that of the suspect. The positive identification of a person by means of blood testing is a goal for the future, as it is believed that the complete blood group of a person is more individual than even his fingerprint.

Medicolegally, blood grouping at present is limited to only three systems of blood factors, which are known as A-B-O, M-N, and Rh-Hr.[6] Actually nine systems are now well known, but the unavailability of the testing serums and the difficulties in the technique of testing limit their usefulness at present. By use of all available tests, however, about 50,000 individual varieties of blood can be determined. In actual forensic work, by use of the three acceptable systems there are 216 varieties of blood demonstrable. By mathematical formulae involving the frequency of each gene, Wiener has calculated the possibility of exclusion of falsely accused men by each system as follows. With the A-B-O system 18% of falsely accused men could be excluded; with the M-N system, 20% of falsely accused men could be excluded; and with the Rh-Hr system, 25% of falsely accused men could be excluded. The chance of exclusion by the combined use of all three systems is not exactly their sum, because of the possibility of exclusion by more than one system. Thus the total chance of exclusion (according to Wiener) is

$$P = 1 - (1 - P_1)\ (1 - P_2)\ (1 - P_3), \text{ etc.,}$$

when P_1, P_2, and P_3 represent the chance of exclusion in each system. Hence

$$P = 1 - (1 - 0.18)\ (1 - 0.20)\ (1 - 0.25)$$
$$P = 1 - 0.492$$
$$P = 0.508 \text{ or } 50.8\% \text{ chance of exclusion.}$$

Thus a falsely accused man has better than a 50% chance of being excluded as a result of these three tests. As additional serums for the other known blood group systems become available, the chance of exclusion will rise. Table 1 shows the tests that could currently be performed in a case of disputed paternity.

Basically the following principles should be used in performing blood tests for medicolegal purposes. 1. The blood specimen must be fresh. 2. Identification of the specimen and the subject must be foolproof. Signature, fingerprinting, or mutual recognition by the opposite party in the action are suggested. Clear and correct marking of the specimen is essential. 3. The test must be performed by a qualified expert. These qualifications have been agreed on by a panel of experts and are listed in the pamphlet prepared for the American Medical Asso-

Attending Physician (Hematology) and Transfusionist, Beth Israel Hospital.

This paper was read in part at the meeting of the American Academy of Forensic Sciences, Chicago, Feb. 25, 1954.

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2. Wiener, A. S., and Sonn, E. B.: Heredity of the Rh Blood Types: IV. Medicolegal Application in Cases of Disputed Parentage, J. Lab. & Clin. Med. **30**: 395-404, 1945.

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ciation.[6] Certainly such experts must be trained in both immunohematology and genetics. The utilization of less expert persons must be discouraged as even the suspicion of error is not permissible. Shipping the specimen by air makes the most expert laboratory readily accessible. 4. The serums used in testing must be of unquestionable potency and specificity. 5. All tests are run in duplicate, with both positive and negative controls, and all readings are done by the blind technique suggested by Wiener.[7] 6. All tests showing exclusions must be repeated, if possible by another expert.

The practical application of the laws of inheritance of the blood factors can be summarized as follows. 1. The blood properties A, B, M, N, Rh_0, rh′, rh″, hr′, and hr″ cannot appear in the blood of a person unless they are present in the blood of one or both his parents. 2. A parent who is of group AB cannot have a child of group O, and a parent of group O cannot have a child of group AB. 3. A parent of group M cannot have a child of group N, and a parent of group N cannot have a child of group M. 4. A parent who is rh′ negative cannot have a child who is hr′ negative, and a parent who is hr′ negative cannot have a child who is rh′ negative. 5. A parent who is rh″ negative cannot have a child who is hr″ negative, and a parent who is hr″ negative cannot have a child who is rh″ negative. (This latter law is subject to some qualification in view of recently reported exceptions in Negroids by Wiener.[7a])

Table 2 illustrates 21 exclusions based on A-B-O, MN, and Rh-Hr systems resulting from 100 consecutive problems involving questions of paternity. Since the probability of exclusion is about 50%, it is obvious that this group also represents an additional 21 falsely accused men who could not be excluded. Of further interest is the fact that in tabulating these 100 completed cases there were eight uncounted instances in which the mother refused to appear for the test, a circumstance that must be viewed with some suspicion. These cases if completed would probably add to the number of exclusions. This study is the sixth series of cases using the three systems to be reported.[8] The following cases are examples of the kind of problems that are seen.

CASE 1.—*Exclusion of One of a Pair of Twins.*—The father's group was A N Rh_1rh, the mother's group was O M Rh_2Rh_2, and the children's groups were A_1 MN Rh_2rh and O M Rh_2rh. The question of dual paternity for a set of dissimilar twins was raised. This has been reported in cattle and other animals but never in man. In this case the first child could not be excluded as a result of blood tests and the second child could be excluded on the basis of M-N grouping, but a judicial ruling excluded the accused man as being the father of either child.

CASE 2.—*Paternity Dispute Involving Ten Children.*—The putative father in this case was a man of 60 who readily admitted maintaining two households. With his legally wedded wife he had four children. In his extramarital household he maintained a second family consisting of a mother and a total of 10 children whose ages varied from 1 to 17 years. He suddenly raised the question of the paternity of the children because he denied any relationship with their mother for a period of three years, whereas the youngest child was only 1 year of age. The man's blood group was A_1 MN Rh_1Rh_1, and the mother's group was O M Rh_1rh. The blood groups of the children are given below.

Children	Age	Children	Age
O MN Rh_1Rh_1	17	A_1 MN Rh_1rh	9
A_1 MN Rh_1rh	15	A_1 MN Rh_1rh	6
A_1 MN Rh_1rh	14	A_1 M Rh_1Rh_1	4
A_1 M Rh_1Rh_1	13	A_1 MN Rh_1rh	3
A_1 M Rh_1Rh_1	11	A_1 M Rh_1rh	1

Such an impressive similarity in blood types speaks strongly for a common father for all except for the oldest son, who represents the only group O child among the 10. The probability of the accused being the father of all but the first child is obviously extremely great; however, blood grouping is only capable of excluding paternity, and in this case, of course, exclusion was not possible.

TABLE 1.—*Tests Used in Paternity Study, Family M*

	A	B	M	N	S	Rh_0	rh′	rh″	hr′	hr″	P	Lu^a	Le^a	K	k	
Mrs. M.	−	−	+	−	+	−	−	−	+	+	−	−	−	−	+	O M S rh pp Lu(a-) Le(a-) kk
Mr. M.	+	−	+	−	+	+	+	−	−	+	+w	−	−	−	+	B M S Rh_1Rh_1 P Lu(a-) Le(a-) kk
Baby M.	+	−	+	−	−	+	+	−	+	+	−	−	−	−	+	B M ss Rh_1rh pp Lu(a-) Le(a-) kk

Not tested: s, Lu^b, Le^b, Duffy, Secretor.

CASE 3.—*Exclusions Involving the hr″ Factor.*—This blood factor has not been as extensively studied as have the others, owing to the scarcity of serum. Extensive family studies are necessary before hard and fast rules of inheritance can be formulated. Certain exceptions to the inheritance laws as given for the other blood factors have been reported by Wiener.[7a] In particular these involve variants of the Rh_0 agglutinogen in Negroids. Cases showing the use of the hr″ factor in exclusion are given below.

Example A: The blood group of the putative father is O N Rh_2Rh_2; that of the mother is A_1 MN rh; and that of the child is O MN Rh_1rh. The exclusion is based on the appearance of rh′ in the child, which is not present in either putative parent. In addition, the putative father, who is hr″ negative, cannot have an rh″ negative child.

Example B: The blood group of the putative father is A_1 N Rh_2Rh_2; that of the mother is O M Rh_1rh; and that of the child is O MN rh. The exclusion is based on the absence of the rh″ factor in the child of an hr″ negative parent in a white family. When the mother was informed of the results of the tests, she dropped the legal action. In this case the absence of the Rh_0 factor in the child precludes the possibility of the presence of the Rh_0 variant that is hr″ negative.

Example C: The blood group of the putative father is O M Rh_1rh; that of the mother is O N Rh_2Rh_2; and that of the child is O MN Rh_0. In Negroids the reciprocal relationship between rh″ and hr″ cannot be assumed to exist. Especially is this the case in instances in which the Rh_0 variant may exist. This example shows an hr″ negative mother whose child is rh″ negative. This would ordinarily exclude the mother. In Negroids, however, the presence of variants of the Rh_0 agglutinogen precludes exclusions based on this law.

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9. Deleted on proof.

Example D: The blood group of the putative father is O MN Rh_1Rh_1; that of the mother is A MN Rh_2Rh_2; and that of the child is A_1 N Rh_2Rh_2. The father is excluded because an hr′ negative father cannot have an rh′ negative child. In addition the reverse rule is applicable, in that an hr″ negative child cannot have an rh″ negative parent.

Example E: The blood group of the putative father is A_1 M Rh_1rh; that of the mother is O MN Rh_2Rh_0; and those of the children are A_1 MN Rh_1rh and B MN Rh_2Rh_2. Paternity cannot be excluded for the first child. Paternity can, however, be excluded for the second child because of the presence of the blood factor B in the child, which is not present in either parent. In addition, the child is hr″ negative and cannot have an rh″ negative parent. Thus a double exclusion exists.

COMMENT

The problem involving the relationship between the rh″ and hr″ factors requires more family studies for its solution. Wiener has postulated the presence of a variant of the Rh_0 agglutinogen that is hr″ negative and that is designated as Rh_0^y. Its corresponding gene would therefore be R^{ou}. To the hypothetical blood of type Rh_0 lacking the hr′ factor, the designation Rh_0^y is applied and its corresponding gene is R^{ov}. To the type Rh_0 blood lacking both hr′ and hr″ factors described by Race, Sanger, and Selwyn [10] the name Rh_0^z was applied, and its corresponding gene is called R^{oz}.

TABLE 2.—*Disputed Paternity Proceedings: Twenty Persons Excluded by Use of A-B-O, M-N, and Rh-Hr Systems*

Case No.	Putative Father	Mother	Children	System That Showed Exclusion
1	O N Rh_2rh	O MN Rh_0	(*a*) O N Rh_2rh (*b*) A_1 MN Rh_0	Not excluded A-B-O
2	A_2 B MN Rh_1rh	B MN Rh_0	(*a*) O M Rh_0 (*b*) B N Rh_0	A-B-O Not excluded
3	O MN Rh_2rh	O MN Rh_2rh	A_2 MN Rh_2rh	A-B-O
4	O MN Rh_1rh	O M Rh_2Rh_0	A M Rh_2Rh_0	A-B-O
5	A N Rh_2rh	A M Rh_2rh	B MN Rh_2rh	A-B-O
6	B MN Rh_2Rh_0	B M Rh_1rh	A_1 MN rh	A-B-O
7	A_1 N Rh_1rh	O M Rh_2Rh_0	(*a*) O M Rh_1Rh_1 (*b*) A_1 MN Rh_1Rh_1 (*c*) O M Rh_2rh (*d*) A_1 MN Rh_2rh	M-N Not excluded M-N Not excluded
8	B N Rh_0	A_1 M Rh_0	A_1 M Rh_0	M-N
9	O N Rh_2Rh_2	A_1 MN rh	O MN Rh_1rh	Rh-Hr
10	B MN Rh_0	A_1 N Rh_1rh	(*a*) A_1 N Rh_0 (*b*) A_1 MN Rh_2Rh_0	Not excluded Rh-Hr
11	A MN Rh_0	B M Rh_2Rh_2	B MN Rh_2Rh_0	Rh-Hr
12	B MN Rh_1Rh_1	B N Rh_1Rh_1	B MN Rh_1rh	Rh-Hr
13	O M Rh_0	O MN Rh_0	(*a*) O MN Rh_1rh (*b*) O M Rh_0	Rh-Hr Not excluded
14	A N Rh_2Rh_2	O M Rh_1rh	O MN rh	Rh-Hr
15	O MN Rh_1Rh_1	A_1 MN Rh_2Rh_2	A_1 N Rh_2Rh_2	Rh-Hr
16	B M Rh_1rh	A_2 MN Rh_1Rh_1	O MN Rh_2Rh_0	Rh-Hr
17	A_1 M Rh_1rh	O N Rh_2rh	B N Rh_2rh	A-B-O, M-N
18	O M Rh_2Rh_0	A M Rh_1rh	A_1 B MN Rh_1Rh_1	A-B-O, M-N
19	A_1 M Rh_1rh	O MN Rh_2Rh_0	(*a*) A_1 MN Rh_1rh (*b*) B MN Rh_2Rh_2	Not excluded A-B-O, Rh-Hr
20	O M Rh_2rh	B M Rh_2rh	A_2 B M Rh_1rh	A-B-O, Rh-Hr
21	O M Rh_2rh	A_1 MN Rh_0	A_1 N Rh_2Rh_0	M-N, Rh-Hr

In the third example of hr″ exclusion listed above, the genotype of the mother (and there is no reason to question maternity) would therefore be R^2R^{ou}. The genotype of the child would therefore be $R^{ou}R$ or $R^{ou}r$, and a situation exists in which an hr″ negative mother does have a child who is rh″ negative.

The existence of a person with this unusual gene warrants caution in the medicolegal application of hr″ tests in paternity studies. An erroneous exclusion of parentage could possibly result unless consideration is given to this possibility. Certainly among Negroids this gene is far more common than among Caucasians, where its presence has not as yet been reported. In the light of present knowledge it would seem advisable not to exclude parentage on the basis of rh″-hr″ relationship unless the Rh_0 factor is absent. Thus only if a parent is Rh_2Rh_2 and the child is rh or rh′ or if a parent is rh or rh′ and the child is Rh_2Rh_2 would it appear safe to conclude that an exclusion exists. In such cases the question of the rare R^{ou} gene would not arise. To date no exceptions to the rh′-hr′ reciprocal relationship have been reported. The possibility of their existence, however, must not be overlooked, and exclusions of parentage based on this relationship should be given with slight qualification.

SUMMARY

In a sixth series of cases demonstrating the use of A-B-O, M-N, and Rh-Hr factors in blood testing in disputed paternity proceedings, 21 putative fathers were excluded in 100 cases. Since it is only possible to exclude 50% of falsely accused men, it can be seen that twice this number, or 42 men, were falsely accused in 100 cases. Blood testing in all paternity proceedings is necessary. The extension of statutes requiring these tests to all the courts of the land is extremely important.

36 E. 38th St. (16).

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The Vanishing Art of Diagnosis.—For 26 years of my life I sat at a crossroads where thousands of people came in who had been thoroughly worked up by good physicians; some of them eminent men, and some of them teachers in universities. . . . As one would expect, mistakes in diagnosis were not made because of ignorance but because of a complete lack of observation of the patient. The chief accepted the poor history taken by an assistant, and he accepted as the diagnosis some report that came from a laboratory girl, a roentgenologist, or some other specialist. A diagnosis can often be demolished in a moment. In many cases one shrewd glance at the patient as he walked in would have made the diagnosis. . . . Nearly fifty years ago, when I was a student . . . we had to observe with our eyes and ears because we had no blood chemistry tests; we had no Wassermann test; we had no electrocardiograms; we had no method of estimating basal metabolism, and the only x-ray machine we had was a wheezy little thing that wasn't of much use. . . . We had to make a diagnosis by taking a long and careful history and then we had to keep examining the patient over and over again with the greatest of care. . . . Among my teachers the ablest ones were shrewd observers. One of my chiefs . . . would often make a remarkably accurate snap diagnosis by asking two or three questions. For instance, one day he looked at a man, and . . . noticed a glass eye and said, "Was your eye removed for a little black tumor?" The man said "yes." My chief's diagnosis instantly was a melanotic epithelioma, and actually the man was dead in a few months. . . . One of the things that bothers me most about our modern type of medical practice is the habit our young doctors are developing of telling a patient, when all his tests are reported as negative, that there is nothing the matter with him. . . . In these cases the doctor feels that his job is done, but . . . it should be just beginning. . . . Usually, in these cases, there is a story of worry or fear that should be brought out and discussed. . . . Often, . . . one can get at the real difficulty by asking, "What are you worried about?" or "What frightened you?".—W. C. Alvarez, M.D., The Vanishing Art of Diagnosing With Eyes and Ears, *Medical Record and Annals*, May, 1954.

PSITTACOSIS-LYMPHOGRANULOMA VENEREUM VIRUS ANTIBODIES IN MAN

EXPERIENCES WITH THIRTY-SEVEN PERSONS WITH RESPIRATORY DISEASE HAVING SIGNIFICANTLY HIGH ANTIBODY TITERS

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Parakeets and pigeons appear to be the most important sources of reported psittacosis (ornithosis) in man.[1] The prediction of Meyer,[2] in 1941, that barnyard fowl were a probable reservoir of viruses of the psittacosis group and therefore a potential source of human psittacosis infection, has been borne out in recent years by reports of cases in man traced to ducks,[3] turkeys,[4] and chickens.[5] Human infection from these sources still appears to be relatively rare if judged by the few reports published to date. However, the mildness of clinical symptoms apparent in many reported cases from these sources and the lack of easily available laboratory facilities has, no doubt, contributed greatly to a general lack of concern on the part of practicing physicians for infections with this group of viruses.

In 1951, the first case of psittacosis was recorded in the area of Warren, Ill.[6] This case occurred in a mechanic who had as an avocation the raising of pheasants. Subsequent serologic studies performed in Dr. K. F. Meyer's laboratory indicated that the patient's flock was infected with psittacosis, and the patient apparently contracted his illness from them.

This case alerted us to the possibility of other cases in the community with the result that during 1952, five additional patients with signs, symptoms, and x-ray evidence of viral pneumonia whose blood serums demonstrated the presence of a significant level of psittacosis-lymphogranuloma venereum (LGV) antibodies came under observation. It soon became apparent, epidemiologically, that pheasants did not account for all of these cases. During the first six months of 1953 we discovered an additional 37 patients with a similar illness whose blood serums showed the presence of significant psittacosis-LGV antibodies.

From the Jo Daviess County Health Department and the Illinois Department of Public Health.

Dr. Karl F. Meyer of the George Williams Hooper Foundation, University of California, San Francisco, aided in these studies. Mr. Lee Erbaugh and Mr. Raymond Murphy gave technical assistance.

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This preliminary report deals chiefly with the clinical picture, laboratory findings, and epidemiological investigation of the 37 patients seen during the first six months of 1953. The patients reported in this study were the private patients of one of us (C. G. W.) and were treated either in his office or at the patient's home. We are fully aware of the fact that the present report is not complete, but we deemed it important enough to report our clinical experiences now, so that other physicians may be alerted to the possibility of psittacosis infections in their communities.

LOCALE AND METHODS

The community where the reported cases occurred is in the northwestern tip of Illinois, in Jo Daviess County. Warren, a town of about 1,400 persons, is the center of the area studied. There are three smaller communities of less than 400 persons about five miles away; one to the east, one to the north, and one to the west. The farmers in this area are chiefly engaged in raising cattle and hogs. They grow corn and oats, which are used chiefly to feed their own livestock. Most farms also have a flock of chickens, which are often cared for by the farmer's wife or children, with some help from the husband. Most flocks consist of from 50 to 300 chickens; about 100 is an average number. As the nearest large towns, with populations of 22,000 and 8,000, are located about 35 miles away, most routine medical care for the area is received from the two physicians in Warren. Complete laboratory and x-ray studies are difficult because of the necessity of traveling to hospitals located in these cities.

In the early part of our study, blood samples were obtained from most patients complaining of chronic cough and from those clinically believed to have virus pneumonia. These samples were submitted to the laboratory of the Illinois Department of Public Health for psittacosis complement fixation tests.

It soon became evident that, while it was possible to demonstrate the presence of psittacosis antibodies in significant titers in the blood serums of certain patients, it was usually not possible to demonstrate a rise in titer. The reason for this was that most patients first sought medical attention several weeks after onset of their illness. Beginning in March, a concentrated attempt was made to obtain blood earlier from persons presenting a syndrome of fever, aches, pains, and malaise; thus, we were able to observe some patients' serums change from negative to positive and to demonstrate a rise in titer in others.

During the entire period, blood samples drawn for other purposes were routinely submitted for study as con-

trols. When possible, blood samples from family contacts were tested. A total of 231 blood samples were taken from 155 different patients.

CLINICAL COURSE AND X-RAY FINDINGS

Patients seen in this study presented a wide variety of complaints. There was considerable variation in the severity of their illness. Listed in order of frequency of occurrence, presenting symptoms were: 1. Cough—this was the chief complaint that caused most patients to seek medical aid. It was usually quite severe and nonproductive, and it often kept the patient awake at night. In many it had been present for several weeks at the time of the first visit. 2. Fever—the patient was often unaware of the fever. It was usually low grade, 102 F being the highest temperature recorded. In the more severely ill, recurrent chills occurred. 3. Headache—headache was usually mild and frontal in location. Most patients had no postnasal discharge or other evidence of sinusitis. 4. Chest pain—pain was usually mild but sometimes severe. It was not pleuritic in character. Some patients complained of difficult breathing, but objective dyspnea was not apparent. In no patients was cyanosis present. 5. Muscular aches and pains—backache, moderately severe, was common, as were general muscular aches and pains. 6. Weakness—about 25% of the patients complained of weakness and easy fatigability. This usually lasted for two to three weeks after the febrile course had terminated. In some cases it persisted much longer. No sequelae have been noted. There were no deaths.

The five patients seen in 1952 had chest roentgenograms, and all showed changes associated with virus-type pneumonia. Of the 37 patients seen in 1953, x-ray studies were done on 20. Of these, 12 studies showed findings associated with virus-type pneumonia and 8 studies showed normal results. We were unable to demonstrate any correlation between severity of illness or intensity of cough and the degree of involvement. Some patients with severe cough had negative x-ray findings.

Treatment.—The treatment varied with the clinical severity of the disease. In mild cases analgesics, antipyretics, and expectorant cough mixtures were used. When the cough was severe, codeine was given before bedtime. When fever was prominent, antibiotics were used. Penicillin and crystalline procaine penicillin G (Duracillin) were given intramuscularly; erythromycin (Ilotycin) or chlortetracycline (Aureomycin) was given orally. It was our impression that penicillin was the drug of choice.

LABORATORY TESTS

Human serums were examined for the presence of antibodies to the psittacosis-LGV group of viruses by the complement-fixation reaction employing Lygranum C. F. antigen. This is a phenol-enhanced antigen [7] prepared from yolk sacs infected with lymphogranuloma venereum virus. It is employed widely in many laboratories as an antigen in complement fixation tests for psittacosis-LGV group infections. A psittacosis-type antigen was later used in comparative tests of certain specimens. No difference could be demonstrated between the two types of antigens with the specimens tested.

Method.—The serums to be tested were inactivated at 56 C for 30 minutes. Then 0.2 ml. volumes of serial twofold dilutions, beginning with 1:8 of the serum, were mixed with 0.2 ml. of antigen (2 units) and 0.4 ml. of guinea pig complement (2 units). These mixtures were incubated for one hour in a water bath at 37 C, after which 0.4 ml. of sensitized sheep erythrocytes were added and the test was incubated again for one-half hour. Appropriate positive and negative controls as well as normal yolk sac antigen controls were included. The titer of the serum was the highest dilution giving a 3 + or stronger fixation reaction. Serums were stored at 5 C with 1:10,000 thimerosal (Merthiolate) for one to two weeks before testing. Early and late specimens from the patient were tested simultaneously whenever possible. The uniformity of the sensitivity of the test from day to day was determined by reference to a standard positive human serum, the titer of which was reproducible within a range of 1 + to 4 + in the same dilution.

In order to determine the relative sensitivity of the test in various laboratories, samples of positive serums from this study were sent to the laboratories of the Communicable Diseases Center, United States Public Health Service, Chamblee, Ga.; the Army Medical Department, Research and Graduate School, Washington, D. C.; and Northwestern University Medical School, Department of Bacteriology, Chicago. Results are shown in table 1.

TABLE 1.—*Comparative Results Obtained in Different Laboratories on Selected Serum* Specimens from Study Area (Reciprocal of Complement Fixation Titer)*

No. of Case	Laboratory Reporting †			
	Ill. Dept. of Public Health	Lab. A	Lab. B	Lab. C
2	12	40	8	..
7	72	80	16	..
8	72	20	8	..
9	36	10	2	..
11	72	80	8	..
28	512	160	128	..
1	72	..	..	64
4	144	..	..	64
10	72	..	..	64
12	64	..	..	64

* Serums were stored at 5 C for periods up to four months before tests in other laboratories were made.
† All results are based on tests with lymphogranuloma venereum antigen except those from Laboratory C, which used psittacosis antigen.

Despite the fact that the serums had been stored for varying periods, up to four months, there was good agreement between this laboratory and laboratories A and C. Laboratory B reported considerably lower titers at a level that would not have been considered significant. Tests for Q fever were found negative by all laboratories.

Fowl serums were tested for evidence of ornithosis infection by the indirect or complement fixation inhibition test. Antibodies to ornithosis virus in the serum of chickens cannot ordinarily be detected by the direct complement fixation test. It has been shown that these antibodies can be detected by measuring the power of the chicken serum to react with psittacosis-LGV antigen and thus inhibit complement fixation that would ordinarily occur on the addition of a serum containing complement fixing antibodies to the psittacosis-LGV group.[8]

7. Nigg, C.; Hilleman, M. R., and Bowser, B. M.: Studies on Lymphogranuloma Venereum Complement-Fixing Antigens: I. Enhancement by Phenol or Boiling, J. Immunol. 53: 259-268, 1946.

Portions of some chicken serums were tested in the laboratory of Dr. Karl F. Meyer, University of California, San Francisco. In the few specimens tested both in the Illinois Department of Public Health and in Dr. Meyer's laboratory there was good agreement. A modified procedure described by Hilleman and others [9] was used in this laboratory as follows:

Chicken serum was inactivated at 56 C for 30 minutes and distributed in 0.2 ml. amounts of serial twofold dilutions. To the tubes containing the diluted serum were added 0.2 ml. each of guinea pig complement (2 units) and Lygranum antigen (2 units). The mixture was incubated in a water bath at 37 C for one hour. Subsequently 0.2 ml. of human lymphogranuloma venereum serum (diluted to contain 2 units) was added to each tube, and the mixtures were again incubated at 37 C for one hour. Finally 0.4 ml. of sensitized cells was added to each tube, and the tubes were incubated for one-half hour at 37 C and read in the usual manner. The titer of the chicken serum was expressed as the highest dilution of chicken serum that removed the antigen and thus inhibited the fixation of complement that would have taken place after the addition of the positive psittacosis-lymphogranuloma venereum serum.

Owing to the difficulty in obtaining sputum from patients in the acute stage of the disease, isolation of the virus from sputum and blood of patients has been attempted in only two instances to date. The results have been negative. Tissue from 14 chickens collected from four farms were also tested in mice. No evidence of virus was observed after three blind passages.

Interpretation of Laboratory Results.—Because of the close antigenic relationship between members of the psittacosis-LGV group and because of their well-known ability to produce latent infection, often resulting in residual positive complement fixation titers, it is generally agreed that proof of clinical illness caused by these agents must rest on the following rigid criteria: (1) isolation of the virus during the acute illness, or (2) the demonstration of a fourfold or greater rise in complement fixation titer during illness.

Because of the fact that a large percentage of the specimens submitted to the laboratory for psittacosis diagnosis are taken well after onset, it becomes necessary to adopt certain guiding principles to assist in at least a presumptive diagnosis. Experience has indicated that complement-fixing antibodies in psittacosis infections usually decline slowly over a period of several months after convalescence, in contrast to nonspecific or anamnestic reactions that usually fade within two or three weeks. Titers of 1:32 or higher, when accompanied by a typical clinical picture, are generally assumed to indicate recent infections.

Since the complement fixation test does not distinguish between the different viruses of this group,[10] a previous or current infection with lymphogranuloma venereum, as well as with inclusion blennorrhea or trachoma,[11] must be ruled out by careful history taking. Persons with a high venereal exposure rate have been reported to show a high incidence of positive reactions, presumably caused by subclinical lymphogranuloma venereum infection.[12] Syphilitic serums have frequently been shown to give a high rate of positive reactions with Lygranum antigens. Although some of these reactions appear to be nonspecific, the majority are believed to be the result of exposure to lymphogranuloma venereum virus.[13] False positive reactions have also been reported to occur in acute infections of Q fever and brucellosis [1] as well as in cirrhosis of the liver.[12]

RESULTS OF STUDIES

Thirty-seven patients presented the typical clinical respiratory disease previously described and showed significant psittacosis-LGV titers (1:32 or above). An additional 11 patients presented a typical clinical picture with titers of less than 1:32. In four of these cases another member of the family had the typical respiratory picture with a titer above 1:32.

There were 22 patients who had typical respiratory symptoms with no titers against psittacosis-LGV. These cases were not distinguishable clinically from those mentioned above. A probable explanation is that at least some of these patients were suffering from an illness not caused by a member of psittacosis-LGV virus group; another is that perhaps in some of these patients who may have been infected with a psittacosis-LGV virus, antibodies detectable by the antigen used did not develop. Specimens from a number of these cases were also tested against a psittacosis type of antigen, with negative results. It is of considerable interest to note that the serums of some of these patients gave positive reaction in the indirect complement fixation tests with Lygranum antigen. The significance of this test in human serums has not been established as yet, but the test is routinely used on serums of certain birds, such as chickens and ducks, where its value is well recognized.[8a]

Several patients who had no respiratory illness or history of recent respiratory illness had elevated psittacosis-LGV complement fixation titers. There were two patients with titers above 1:32. Of considerable importance is the fact that four out of the seven cases in this group occurred in families in which another member of the family was known to have had a respiratory illness associated with significant psittacosis-LGV complement fixation titers. It may be that these cases represent subclinical infections.

Tests were performed on specimens from 78 additional persons. These served as controls. Included among these specimens were blood samples drawn for other procedures in our office such as routine Kahn tests and ag-

8. (*a*) Karrer, H.; Meyer, K. F., and Eddie, B.: Complement Fixation Inhibition Test and Its Application to Diagnosis of Ornithosis in Chickens and in Ducks: I. Principles and Technique of Test, J. Infect. Dis. **87**: 13-23, 1950. (*b*) Hilleman, M. R., and Helmold, R. J.: Indirect Complement-Fixation Test for Psittacosis-Lymphogranuloma Venereum Group Antibodies in Chicken Antisera, abstracted, Fed. Proc. **8**: 405, 1949.

9. Hilleman, M. R.; Haig, D. A., and Helmold, R. J.: Indirect Complement Fixation, Hemagglutination and Conglutinating Complement Absorption Tests for Viruses of Psittacosis-Lymphogranuloma Venereum Group, J. Immunol. **66**: 115-130, 1951.

10. Rake, G.; Eaton, M. D., and Shaffer, M. F.: Similarities and Possible Relationships Among Viruses of Psittacosis, Meningopneumonitis, and Lymphogranuloma Venereum, Proc. Soc. Exper. Biol. & Med. **48**: 528-531, 1941.

11. Rake, G.; Shaffer, M. F., and Thygeson, P.: Relationship of Agents of Trachoma and Inclusion Conjunctivitis to Those of Lymphogranuloma-Psittacosis Group, Proc. Soc. Exper. Biol. & Med. **49**: 545-547, 1942.

12. Shaffer, M. F., and Rake, G.: Studies on Lymphogranuloma Venereum: Evaluation of Complement Fixation Test with Lygranum, J. Lab. & Clin. Med. **32**: 1060-1086, 1947.

13. Wetherbee, D. G.; Hilfer, R. J.; Maspero, B., and Kuhns, D. M.: Complement-Fixation Test in Diagnosis of Lymphogranuloma Venereum, Am. J. Clin. Path. **21**: 521-529, 1951.

glutination tests, as well as contacts and patients with upper respiratory diseases such as tonsillitis, otitis media, and sinusitis.

There were eight cases serologically proved by a fourfold rise in titer or a change in titer from negative to at least a positive titer in dilution of 1:32. The remaining 29 cases are considered suspicious but not definitely proved by the required fourfold rise. Most of this latter group were first tested late in the course of their illness, or it was possible to obtain only one sample of blood for testing. The clinical symptoms in most of these suspected cases were indistinguishable from those observed in the serologically proved group. On the other hand, tests on patients with minor upper respiratory and other miscellaneous complaints showed very few positive reactors. As shown in table 2, about half of the cases occurred in the age group below 30, and the cases were fairly well divided between the sexes. There was tendency for a larger number of cases to occur in the younger age groups. Significantly, there were two cases reported in children under 10 years of age; one child was 7 years old and the other 9. In four of the families there were two different members who had significant titers and typical respiratory complaints.

TABLE 2.—*Age and Sex Incidence of Psittacosis in Patients Reported on*

Age	No. of Male Patients	No. of Female Patients	Total
Below 10	0	2	2
10 to 19	8	2	10
20 to 29	2	6	8
30 to 39	4	3	7
40 to 49	1	4	5
50 to 59	1	0	1
60 to 71	4	0	4
Total	20	17	37

In two cases, positive Kahn tests were obtained. In one of these patients, the illness was of such severity that she was treated with erythromycin. A subsequent Kahn test was negative. In the second case, the patient had already recovered when a positive psittacosis-LGV test was obtained. She received no treatment, and her Kahn test was negative when repeated a week later.

EPIDEMIOLOGICAL CONSIDERATIONS

Of the 37 cases discovered in this community, 27 occurred in persons living on farms. Nine cases occurred in persons living in Warren or surrounding towns, and one occurred in a patient who lived in a city about 40 miles distant who was visiting in Warren when her case was accidentally discovered on a premarital blood test.

Of the 155 patients whose blood samples were tested, 95 lived on farms or regularly worked on a farm, and the remaining 60 lived in towns. The incidence as to residence was 28% of tests positive in farmers compared to 17% of tests positive in persons living in town. The higher attack rate among farmers suggested to us that the farmer was in closer contact with the source of infection than persons living in town.

Investigation of possible avian and mammalian sources to which patients from farms could have been exposed showed chickens to be the only potential reservoir commonly associated with these cases. The type of contact with chickens varied considerably. There was no evidence of consistent close contact, and several patients living on farms denied any direct contact. Blood specimens from chickens in the area were collected for serologic tests for psittacosis infection. The results of these tests are shown in table 3. Thirty-three per cent of all chickens tested showed positive indirect complement fixation titers with Lygranum antigen. Liver, lungs, kidney, and cloaca tissues collected from 14 chickens were tested in mice with negative results after three blind passages. Farmers, when questioned about the health of their chickens, reported a noticeable but not serious increased death rate above normal. No conclusions could be drawn regarding illness in chickens and serologic evidence of psittacosis infection.

Special consideration of the 10 cases not occurring in the farm population indicated that it was very unlikely that any of these persons had been directly in contact with chickens. One patient had cleaned a chicken yard two weeks prior to onset of his illness; another patient had an apparently well parakeet in his home; and a third patient had an apparently well canary. No direct contact with birds could be found in the remaining seven cases. The importance of human to human transmission in these cases was seriously considered. Only one suggestive situation could be demonstrated. This occurred in a college student who had a severe cough while at school. She visited her family and two weeks later her father, a minister, who had no contact with any birds, came down with a severe cough. There was x-ray evidence of pneumonitis. Both of these persons had significantly high titers to psittacosis-LGV. In neither was it possible to demonstrate a rise in titer.

TABLE 3.—*Results of Complement Fixation Inhibition Tests (Lygranum) of Chicken Serums from Farms in the Warren Area*

Farm No.	Date Collected	No. of Chickens Tested	No. of Chickens Showing Inhibition Titers				Ratio of Positive Tests to No. of Tests Made
			Neg.	1:8	1:16	1:32	
1	4-10-52	4	3	..	..	1	1/4
2	4-10-52	5	1	2	2	..	4/5
3	6- 9-53	7	4	3	..	..	3/7
4	6- 9-53	9	7	1	1	..	2/9
5	6- 9-53	12	7	3	2	..	5/12
6	6- 9-53	5	5	..	..	..	0/5
7	6- 9-53	9	8	..	1	..	1/9
8	6- 9-53	7	5	1	1	..	2/7
9	6- 9-53	11	8	3	..	..	3/11
10	6- 9-53	7	3	..	3	1	4/7
11	8- 7-53	3	2	..	..	1	1/3
		79	53	13	10	3	26/79

There appeared to be a pronounced seasonal incidence of cases beginning in March and declining during June. There also appeared to be a decline in the incidence of positive blood specimens from the surveys during June.

SURVEY OF SURROUNDING AREAS

Because of the high incidence of positive reactors encountered from the rural area under consideration in this study and the consistent absence of history of contact with psittacine birds, it was decided to obtain blood samples from cross sections of several other areas. Three separate surveys were conducted. The first consisted of

blood samples submitted for Kahn tests by all physicians in Jo Daviess County, where Warren is located. Most of these were submitted for premarital tests. A second survey included blood samples drawn for other laboratory tests from patients in a Freeport hospital. This hospital is located about 30 miles from the town of Warren and serves a large proportion of the study area. A third survey was conducted of blood samples submitted for premarital Kahn tests from the city of Chicago. The results of these surveys are shown in table 4.

Attempts to obtain history of exposure or clinical symptoms of persons having positive psittacosis reactions in these surveys were only partially successful. Information was available on nine of the 20 positive reactors. The majority lived on farms in the Warren vicinity or in other small towns in the Freeport area. One patient had syphilis, and another gave a history of previous lymphogranuloma venereum infection. None of the Lygranum positive reactors in the survey of bloods submitted for the Kahn test had a positive Kahn test. The results gave strong assurance that the positive reactions with Lygranum antigen were peculiar to the rural area.

TABLE 4.—*Summary of Psittacosis-Lymphogranuloma Venereum Serology Surveys*

Source of Blood	Patients Tested	Number Positive 1:8 1:32	Number Positive 1:32 and Higher	% Positive (1:32 or Higher)
Jo Daviess county blood samples for Kahn test	78	7	11	14
Freeport Hospital survey	101	5	9	9
Chicago blood samples for Kahn test	40	3	0	0
Warren area	155	16	39	25

COMMENT

The group of viruses known to be antigenically related to the psittacosis-lymphogranuloma venereum group is extensive. Viruses of this group have been isolated from a variety of avian and mammalian sources, including man. Their role in avian infection has been extensively studied, and valuable contributions to our knowledge of the role of avian viruses in human infection has been made by Meyer and his co-workers. The mammalian viruses have been less well studied, and little is known about the potential role of these agents in human infection or of the extent of transmission in man. Meyer and others have called attention to the few recognized instances of human psittacosis infections believed to have come from chickens and to the mild nature of the clinical symptoms. The evidence from the few reports of outbreaks of ornithosis in poultry workers [14] have suggested that these have resulted from chance exposure to heavily infected flocks and that infection in poultry workers is not common.

The circumstances encountered in this study seem to parallel closely the findings reported by Wolins [3] on Long Island duck farms where psittacosis has been found to be endemic. Human cases appeared during the months of April and May corresponding to the annual increase in the duck population.

During the months of March, April, and May in the Warren area, hatching of young chickens begins. It is possible that with the increase in the young chicken population, infection of the young birds from the older fowl takes place with a resulting increase in virus excretion by the acutely infected birds. Meyer [15] has shown that birds with latent infection eliminate the virus in small amounts but that acutely ill birds tend to excrete large amounts of active virus. In our study, although the highest incidence of human cases occurred during March, April, and May, some new cases have been encountered throughout the year.

We believe, as others have already pointed out, that the generally held concept of psittacosis as a rare, very severe illness should be greatly modified. It seems that this idea, coupled with the belief that these infections almost always result from exposure to parrots and parakeets, still strongly influences the diagnosis of respiratory infections. At this stage of our study it cannot be determined whether this area represents an unusual endemic incidence or whether other studies will reveal similar situations in other rural areas. In view of the often mild severity and lack of any pathognomonic signs and symptoms the disease could easily run its course in many patients without detection, unless the attending physician considered this possibility. It would certainly appear from our experience that in any case of virus pneumonia or chronic cough occurring in persons in rural areas, the possibility of psittacosis infection should be considered.

SUMMARY AND CONCLUSIONS

In 37 cases of respiratory disease associated with significant complement fixation titers to the psittacosis-lymphogranuloma venereum group, the course of the disease was reasonably mild. Clinical, epidemiological, and laboratory evidence indicates the widespread incidence of a psittacosis-like infection in the rural area under study.

Evidence suggests that the most likely reservoir of the virus was in the chicken population and that although rural inhabitants were more likely to contract the disease, persons living in small towns apparently became infected in a manner that could not be determined. Virus-contaminated eggs and objects contaminated by chicken feces were suspected as the most likely means of dissemination of the virus. It should be stressed that the evidence presented in this preliminary study, although strongly suggestive, cannot be considered valid proof of the existence of human cases of psittacosis (ornithosis). Further attempts to isolate a viral agent from human beings are being made.

Warren, Ill. (Dr. Ward).

14. Wolins,[3] Irons and others,[4] Mandel and Jordon.[5b]
15. Meyer, K. F.: Ecology of Psittacosis and Ornithosis, Medicine **21**: 175-206, 1942.

Surgical Leadership.—Surgery is hand work. It deals for the most part with processes that are . . . localized in space and localized in time. Being localized in the body, they can be mended or removed by the surgeon's skill. Being localized in time, they can be mended effectively only if the application of that skill is timely. Surgery deals with some crisis, great or small, in the lives of people hitherto healthy and active, and if the treatment is effective it restores them to health and activity. The effectiveness of the treatment depends on the services of one man—the surgeon—on his correct assessment, his timely decision, his skilful manipulation, and his unremitting care.—Sir Heneage Ogilvie, Surgical Leadership, *The British Journal of Surgery*, January, 1954.

CLINICAL NOTES

SIMPLE CARDIAC PACEMAKER AND DEFIBRILLATOR

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and
Darwood Hansen, Detroit

The problem of cardiac arrest is a constant one. Numerous techniques of resuscitation, in instances in which arrest is reversible, have been devised. Since the initial work of Wiggers [1] on the application of countershock in ventricular fibrillation, there have evolved many successful electrical devices for treatment of this condition. Leeds [2] has published a full description of modern high-voltage defibrillators and their applications.

In recent years, increasing attention has been paid to the possibility of resuscitation in instances of cardiac asystole by means of repetitive electrical stimuli. Callaghan and Bigelow [3] successfully stimulated dog hearts with monophasic and diphasic thyratron pulses. Electrodes were applied directly to the heart through surgical incision in the thoracic wall or internally by means of an external jugular vein lead. Herrod and others [4] also reported on rhythmic thyratron stimulation of the dog heart with the open chest technique. Recently, Zoll [5] published reports of two cases in which a thyratron pacemaker was successfully used on human patients. His electrodes were applied subcutaneously on each side of the anterior wall of the chest, thus stimulating across the entire chest.

During the last two years, we have developed a cardiac stimulator incorporating (1) an inexpensive circuit combining a defibrillator and pacemaker; (2) portability, simple operation, and easy repair; (3) a rapidly applied electrode system for both medical and surgical emergency; and (4) safety for both patient and physician.

Cardiac Pacemaker.—In order to meet the purposes set forth, a circuit was selected that involved a minimum of parts, a controllable square wave output, electrical isolation, and a visual indicator. The most effective stimulus duration and intensity was first determined in laboratory animals with a Grass S-4 Stimulator. The stimulus parameters selected were those found successful in induced cardiac arrest in 14 cats and 8 dogs.

Dr. Ernest D. Gardner, Chairman, Department of Anatomy, supervised many phases of this study. Drs. Gordon H. Scott, Douglass Chandler, and Ferdinando Morin aided in this study.

1. Wiggers, C. J.: The Physiologic Basis for Cardiac Resuscitation from Ventricular Fibrillation—Method for Serial Defibrillation, Am. Heart J. **20**: 413, 1940.

2. Leeds, S. E.: Cardiac Resuscitation, J. A. M. A. **152**: 1409 (Aug. 8) 1953.

3. Callaghan, J. C., and Bigelow, W. G.: Electrical Artificial Pacemaker for Standstill of Heart, Ann. Surg. **134**: 8, 1951.

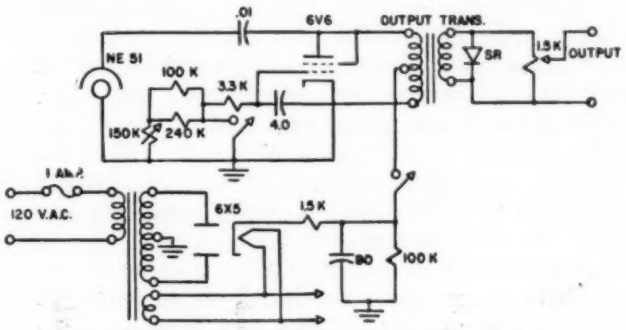
4. Herrod, C. E., and others: Control of Heart Action by Repetitive Electrical Stimuli, Ann. Surg. **136**: 510, 1952.

5. Zoll, P. M.: Resuscitation of the Heart in Ventricular Standstill by External Electric Stimulation, New England J. Med. **247**: 768, 1952.

6. Chandler, D., and Rosenbaum, J. B., Am. Heart J., to be published.

A blocking oscillator circuit was then used for the clinical instrument (see figure). Since the output transformer is critical, various ones were tried until one was found that gave a rectangular pulse of approximately 10 milliseconds' duration. The overshoot of the transformer was reduced by means of a selenium rectifier, which also helped to maintain the rectangular wave shape at the output pulse. The rate is variable between 20 to 200 times per minute by means of a potentiometer in the grid circuit of the oscillator tube. The output impedance was set at 500 to 1,000 ohms and loaded. The voltage is variable from 0 to 60 volts into a load of 1,000 ohms. The output of the cardiac stimulator is electrically isolated from the power line so that there is no danger to either patient or physician from an accidental ground.

Numerous electrode combinations were tried. A rapid and efficient system consisted of a standard 21 gauge syringe needle inserted subcutaneously, parallel with the skin, at the angle of the left scapula, and an 18 gauge blunted needle, inserted through a 14 gauge trocar at the midclavicular line of the fourth left intercostal space. The blunted electrode rested on the pericardium. Alternatively, a flexible wire can be inserted through the trocar, the trocar withdrawn, and the wire left in place.



Blocking oscillator circuit for cardiac pacemaker.

The apparatus was made available to the Department of Medicine of the Detroit Receiving Hospital under the direction of Dr. Gordon Myers. It was recently used on a patient with complete heart block. Intermittent application of the pacemaker for a total of two and one-half hours over a period of eight hours was successful in maintaining an adequate cardiac output. The clinical aspects have been described in detail.[6]

Defibrillator.—By decreasing the time constant of the oscillator circuit, a frequency up to 100 cps is available. We found that in laboratory work this frequency, at 10 milliseconds pulse duration and relatively low voltage, proved to be effective in counteracting fibrillation. The needle electrode system was successful with this defibrillator as well as the standard plate defibrillator electrodes used in open chest work. No clinical trials, however, have been carried out, and future use in this regard is now being studied by Dr. Prescot Jordan of the Department of Surgery, Wayne University College of Medicine.

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CLOSURE OF LARGE ATRIAL SEPTAL DEFECT BY THE METHOD OF BJÖRK AND CRAFOORD

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and
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Cardiac surgeons have made sporadic attempts to devise a suitable method of closure of atrial septal defects for some time. Cohn [1] in 1947 invaginated the atrial wall, sewed it to the edges of experimental defects, and cut loose the fixed portion of the wall. Murray [2] in 1948 proposed and used in patients a method of direct closure by suture that appears, from his description of the operation, to resemble the method described below. At the time of writing of Murray's article, one of his patients who seemed clearly to have had an atrial septal defect was doing very well after the operation. Others [3] have devised methods of suture or methods using prostheses that have functioned well in animals but have not done well or have not been tried in human beings. Gross and others [4] report success in three of six instances of operative closure of atrial septal defect by a method in which a well is sewed to the side of the atrium; blood flows up into the well to a height of only 4 to 8 cm., leaving access to the interior of the heart at the bottom of the well without the annoyance of a purse-string suture about the finger. Gross' most successful results were achieved by directly suturing portions of the atrial wall to the edges of the defect or by patching the defect with thin plastic. Bailey's method [5] seems to have been given the most extensive clinical trial. He invaginates a portion of the atrial wall without cutting it loose and sews it to the edges of suitable defects. Bailey rightly emphasizes the value of placing sutures under digital guidance with a finger in the atrium. His paper contains a detailed review of his own and other operations. Until the method of Björk and Crafoord [6] was described, however, none of the methods seemed suitable for large defects. In the Björk-Crafoord operation, which they credit to the suggestion of T. Sondergaard, a dissection between the two atria creates a groove between the superior vena cava and the right pulmonary veins, and a suture is passed in such a way that when tied it obliterates the defect without encroaching on the vena cava, the coronary sinus, or the tricuspid valve. Their publication [6] mentions three patients successfully treated in this manner. In the following case the Björk-Crafoord method was used to close a large defect in the heart that was a cor triloculare biventriculare.

From the Acuff Clinic.

1. Cohn, R.: An Experimental Method for Closure of Interauricular Septal Defects in Dogs, Am. Heart J. **33**: 453, 1947.
2. Murray, G.: Closure of Defects in Cardiac Septa, Ann. Surg. **128**: 843, 1948.
3. Hufnagel, C. A., and Gillespie, J. F.: Closure of Interauricular Septal Defects, Bull. Georgetown Univ. Med Center **4**: 137, 1951. Swan, H.: Surgical Closure of Interauricular Septal Defects, J. A. M. A. **151**: 792 (March 7) 1953.
4. Gross, R. E.; Pomeranz, A. A.; Watkins, E., Jr., and Goldsmith, E. I.: Surgical Closure of Defects of the Interauricular Septum by Use of an Atrial Well, New England J. Med. **247**: 455, 1952.
5. Bailey, C. P.; Bolton, H. E.; Jamison, W. L., and Neptune, W. B.: Atrio-Septo-Pexy for Interatrial Septal Defects, J. Thoracic Surg. **26**: 184, 1953.
6. Björk, V. O., and Crafoord, C.: The Surgical Closure of Interauricular Septal Defects, J. Thoracic Surg. **26**: 300, 1953.
7. Drs. Bergein Overholt and Wilson Powers gave expert medical assistance in this case.

REPORT OF A CASE

A white woman, aged 32 years, had always been considered an invalid. In childhood she had been found to have a prominent cardiac murmur and had had frequent attacks of pneumonia or bronchitis. Her activities had always been limited, perhaps more on the advice of her physicians than on the basis of circulatory failure in her earlier years. She had never been cyanotic; development had been normal, but she had remained underweight. As she grew, the center of the chest had become quite prominent. There was no history of an illness resembling chorea or rheumatic fever with joint pains, although one of the episodes described as pneumonia could have been rheumatic fever. During adult life she had limited her activities to light housework. She had shown signs of cardiac failure and had been taking digitalis for four years. During the four years prior to examination she had noted increasing fatigue; for the two months prior to examination she had been in bed most of the time because of fatigue and congestive failure. The system review was normal except for frequent headaches. Physical examination disclosed a thin, nervous white woman aged about 32 years. The weight was 100 lb. (45.4 kg.); temperature, 98.6 F; pulse rate (at bed rest), 90 per minute; blood pressure, 130/90 mm. Hg. The skin was pale and sallow, but the mucous membranes were of normal color. There was no cyanosis or clubbing of the fingers. No abnormalities of the head or neck were noted. The central portion of the chest was prominent; expansion was good; a few moist rales were heard at the bases of both lungs. The heart seemed to be enlarged to the right, but not to the left. A loud systolic murmur could be heard over the second and third interspaces on the left; a snapping mitral first sound was heard at times, but most observers thought no diastolic murmur was present. The pulmonic second sound was accentuated. Peripheral pulsations were present in all extremities. The liver could be palpated a little below the costal margin, and the spleen was palpated. No edema was present. The remainder of the examination was within normal limits. Roentgen and fluoroscopic examination of the chest and the heart disclosed a large pulmonary artery shadow, enlargement of the right atrium and ventricle, and probably a little enlargement of the left ventricle. Increased vascularity of the lung fields was present, and calcification in the region of the mitral valve was seen. Laboratory studies showed the red blood cell count, white blood cell count, hemoglobin level, hematocrit reading, and urine to be normal.

Our diagnosis was atrial septal defect, possibly with mitral stenosis. Dr. Powers' [7] diagnosis was atrial septal defect with mitral regurgitation. In view of the patient's increasingly frequent episodes of congestive failure, it was considered worthwhile to repair the septal defect. She was prepared for operation by continuance of the digitalis therapy and by the sparing use of mercurial diuretics, none of the latter being used during the week prior to operation. Fluid intake was restricted. Under this regimen, the patient maintained compensation; the sodium level was 139 mEq. per liter and the serum protein level normal.

At operation, Feb. 13, 1954, an incision in the right chest was made, and a Gross atrial well was attached to the wall of the right atrium, which was greatly thickened and enormously enlarged. Many fine adhesions were present between the pericardium and the epicardium. On palpation of the interior of the heart, a huge atrial septal defect measuring about 8 cm. in diameter was found. Except between the superior vena cava and the superior pulmonary vein, where a 1 cm. rim extended inward, no atrial wall was present. The pulmonary veins all emptied into the left atrium; that is, their points of entrance into the large, globular common atrium were in proper relationship to the venae cavae. The mitral valve leaflets were beaded and without palpable calcification; a light regurgitant jet could be felt as the valve functioned. The mitral orifice readily admitted two fingers. The margins of the tricuspid valve leaflets were also rolled and beaded, but the valve functioned normally; the medial leaflet was calcified. A dissection was carried out between the superior vena cava and the superior pulmonary veins to form a groove, in the way described by Björk and Crafoord. A suture was passed along the aorta, hooked subendocardially into the interventricular septum, and brought out between the inferior vena cava and the inferior pulmonary vein. No irregularities were observed on the electrocardiogram during this time.

When the suture was tied, the atrial wall was brought down to the interventricular septum to form an atrial septum. The orifices of the venae cavae, the coronary sinus, and the tricuspid valve remained unobstructed after the suture was tied. The right atrium shrank to normal size as a result of being tied down and of manifestly lowered pressure within it. The condition of the circulation, which had not been bad at any time, improved after the suture was tied. The postoperative course has remained uneventful at the time of writing; the patient feels that her condition is improved, and there have been no further episodes of failure.

514 W. Church Ave. (16) (Dr. Southworth).

TREATMENT OF PYODERMA WITH POLYMYXIN B-BACITRACIN OINTMENT

Bernard J. Pass, M.D., Nashville, Tenn.
and
Herbert Rattner, M.D., Chicago

Among the new and highly effective antibiotic ointments developed in recent years is one consisting of bacitracin, 500 units, and polymyxin B, 10,000 units, in a base of petrolatum (Polysporin). We used it in treating 577 consecutive cases of pyogenic infections of the skin with results that were altogether satisfactory (see table). There were no toxic reactions or failures in the 577 cases treated.

The patients were asked to apply a film of the ointment "frequently." Lesions responded more quickly when the ointment was applied hourly than when it was applied only three or four times in the day, and, as was to be expected, superficial infections responded to treatment more readily than deep-seated ones. Of the cases of primary pyoderma, impetigo showed decided improvement within three days; it was often cured in only one day, and it healed invariably within seven days. Ecthyma and pyogenic paronychia required up to two weeks to heal, and sycosis vulgaris sometimes required as long as three weeks. However, supplementary treatment with x-ray therapy or cryotherapy materially shortened the time for recovery from sycosis.

Secondary pyoderma (infected dermatoses, e. g., eczema, herpes, seborrheic dermatitis) responded in much the same manner. The ointment cleared the infectious phase usually within 4 to 10 days but did not influence the course of the underlying disease with the exception of herpes simplex, in which the course of the infection was shortened appreciably. In addition, when there was discomfort caused by an infectious element as in stasis ulcers, herpes simplex, and in some cases of eczema, the ointment afforded almost immediate relief.

In the entire group (577 cases) only 3 patients complained of a burning sensation from the ointment, but in none of these was there objective evidence of irritation. It is probable that because of the acute quality of the inflammation any ointment base would have proved irritating. Moreover, one of these patients with pyoderma of the scalp used the ointment again without discomfort after a few days of treatment with soothing wet packs.

In 34 cases the medicament was employed also as a prophylactic measure on gauze dressings covering the entire face immediately after the surgical planing of acne scars. The dressings were left on for four days. In none of the cases was there any postoperative infection. Four of the patients had such dressings applied again six months later after a second planing operation without evidence of sensitivity. Infants, children, and adults tolerated the ointment and benefited from it equally.

Results of Treatment of Pyoderma with Polymyxin B-Bacitracin Ointment

Diagnosis	No. of Cases	Time Required for Remission, Days *
Primary Pyoderma		
Impetigo	151	3- 7
Ecthyma	19	7-14
Sycosis vulgaris	38	7-21
Paronychia	14	7-14
Pyoderma Complicating:		
Eczema of the hand	18	5
Herpes simplex	25	3
Seborrheic dermatitis	24	10-14
Atopic dermatitis	16	6-10
Stasis ulcer	12	14-21
Folliculitis	64	4- 6
With furuncle	15	4- 6
Acne vulgaris	97	4- 7
Dermatophytosis	5	5-12
Contact dermatitis	5	4- 6
Infectious eczematoid dermatitis	9	8-14
Prophylactic after surgery for acne scars	34	....
Miscellaneous		
Herpes zoster	3	3
Perleche	8	3
Herpes progenitalis	3	5
Neurotic excoriations	3	7-14
Infected bites	7	3
Urticaria papulosa (lichen urticatus)	1	7
Folliculitis keloidalis (acne keloid)	1	21
Intertrigo	3	7
Scabies	2	7
Total	577	

* In the cases in which pyoderma was a secondary factor complicating another condition, the time given is that required for remission of the pyoderma stage.

Culture studies were done in only 100 of the cases for two reasons. First, it soon became evident that only the commonly encountered organisms would be recovered. Second, it was thought advisable to simulate common office procedures—to institute treatment first and then in case of an unfavorable result, to undertake culture and sensitivity studies. Hemolytic and nonhemolytic Micrococcus pyogenes var. albus, beta hemolytic streptococci, and nonhemolytic Micrococcus pyogenes var. aureus were recovered in 90 of the cases; hemolytic Micrococcus pyogenes var. aureus and nonhemolytic streptococci were recovered in the other 10.

414 Doctors Bldg. (Dr. Pass).

From the Department of Dermatology, Northwestern University Medical School (Dr. Rattner).
The ointment used in this study was supplied by Burroughs Wellcome & Company, Inc., Tuckahoe, N. Y.

PLASTIC REPAIR OF THE MUCOUS MEMBRANE AFTER CLOSED FOSSA TONSILLECTOMY

Ernest B. Emerson Jr., M.D., Rochester, N. Y.

Since the first tonsil surgery was performed, it has been traditional to leave the fossa wide open after incision is completed. As might be expected of any large wound that is left open and allowed to granulate and heal from the edges, hemorrhage has, through the years, continued to be a serious problem that sometimes causes death. In an effort to improve the situation from the point of view of hemorrhage, the closed fossa tonsillectomy was introduced in May of 1952.[1] Continued success with this procedure in over 1,000 consecutive hemorrhage-free cases [2] and the improved postoperative course of the patients prompted us to look for a means of completing the closure of the wound, i. e., closure of the mucous membrane over the narrow raw surface left after the use of the closed fossa technique.

Observation of patients after tonsillectomy over a period of years shows that in the majority of cases, by the end of the third to fifth year, a large part of the anterior pillar tends to atrophy. A more critical evaluation of this phenomenon shows that this atrophy of the anterior pillar involves only that part of the pillar that is made up of little more than mucous membrane. The muscular portion, the glossopalatine muscle, remains intact. It therefore becomes apparent that the necessary additional flap of mucous membrane for repairing the fossa can be obtained from this location without interfering with the normal motion and function of this portion of the throat.

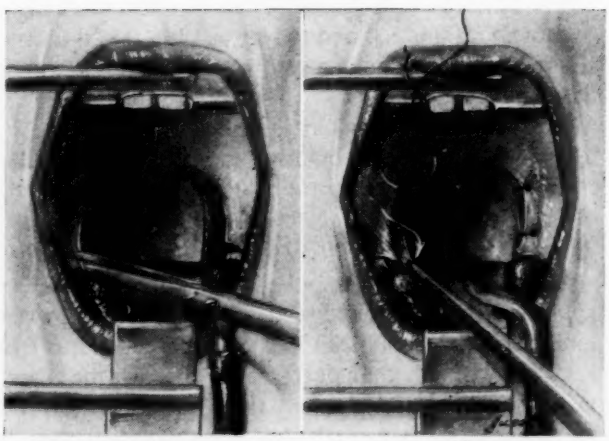
TECHNIQUE

Tonsillectomy is first performed by means of the blunt dissection technique, as the fossae must be clean and symmetrical if closure is to follow. Closure of the fossa proper is then performed as previously described.[1] This technique may be considered in much the same light as the closure of the deeper layers of any other surgical wound. This closure of the deeper layers must be done with as much care as it is in any other wound so that bleeding will not occur under the final closure.

To obtain as large a flap of mucous membrane as possible it is important that the tonsil, during dissection, be pulled as far to the midline as possible to save, by careful dissection, some mucous membrane from the surface of the tonsil itself. The mucous membrane of the anterior pillar is then cut free from the base of the tongue. This is done with the scissors, and the cut is carried along a line parallel to and a few millimeters away from the tongue itself. The pillar is freed through the mucous membrane as far as the muscular portion, but the muscle proper is not taken (see figure, *A*).

The plastic flap is then grasped and carried towards the midline; from there it is carried down and rotated over the closed fossa as far as it will reach (see figure, *B*). As a rule the flap will cover all but the lowermost reaches of the lower pole. The flap is fastened in place by two no. 00 plain catgut sutures, one at the lower extremity, the other at the onset of the curve of the arch to the palate (see figure, *B*). The first suture is placed into the free edge of the posterior pillar below where it appears the flap will naturally stretch and extended to the tip of the flap. When it is tied, the plastic flap falls nicely into place. The second suture passes through the free edges of the posterior and anterior pillars at the onset of the curve of the pillar, extends to the palate, and is tied.

With completion of the above steps, the wound is closed and three specific things have been accomplished, fulfilling the requirements of good modern surgery. 1. Bleeding is controlled. 2. Dead space has been eliminated by closure of the deeper layers. 3. The raw surface has been covered by the plastic flap of mucous membrane so that healing may progress in an orderly manner to completion by primary intention.



a b

Technique for plastic repair after tonsillectomy. *A*, the fossa on the left side has been closed, and the scissors are in place to cut free the mucous membrane portion of the anterior pillar. The pillar on the right has been freed. In the actual operation, this incision is deeper in the throat than shown in the illustration. *B*, the flap on the left has been pulled towards the midline and is about to be carried on down towards the lower pole. On the right side the sutures have been placed. The lower suture would be placed deeper than shown in the illustration.

COMMENT

The present series of cases consists of 215 cases in which the plastic repair has been done. The ages of the patients range from 18 months to 60 years. The advantages of the technique should be obvious: elimination of postoperative hemorrhage, faster healing, earlier eating and easier taking of fluids with reduction of dehydration and fever after operation, less need for sedation, and a general easing of the postoperative difficulties experienced by the patient, especially the adult. There have been no serious complications. Hemorrhage has not occurred. There have been no submucosal hematomas. Infection has not been a problem, although 300,000 units of procaine penicillin is used routinely on the day of operation and the following day except in patients known to be sensitive to the antibiotics. Prophylactic pulmonary aspiration is carried out at the close of the operation if there is any reason to believe that tracheobronchial con-

From the Department of Surgery, Division of Otolaryngology, University of Rochester School of Medicine and Dentistry.

1. Emerson, E. B., Jr.: Closed Fossa Tonsillectomy: Method for Reducing Postoperative Bleeding, J. A. M. A. **149**: 348-350 (May 24) 1952.

2. Emerson, E. B., Jr.: A Review of One Thousand Consecutive Closed Fossa Tonsillectomies Without Spontaneous Hemorrhage, New York J. Med., to be published.

tamination has occurred. This may be done with the tracheobronchial aspirator with the gag still in place.[3]

The healing time in children is five to seven days. Adult patients have returned to work on the 7th to 10th postoperative day without difficulty. The shorter time away from the job represents a real economic gain to the adult wage earner. The operating time is about 20 minutes for children and 30 minutes for adult patients. This, with good insufflation anesthesia, certainly is not excessive when one considers the safety and comfort of the patient after the operation.

The technique of closure of the deeper layers, the cutting of the plastic flap, and the suturing of the flap in place is not difficult. It requires no more expert technical knowledge than is expected of any surgeon or general practitioner who does herniorrphies or appendectomies. In retrospect, one wonders why there should have been the long persistence in use of the open fossa technique, as plastic surgeons have long since demonstrated that oral wounds may be safely closed and dentists do not hesitate to suture an extraction site. In fact, even the otolaryngologists have for years sutured traumatic wounds in the mouth and pharynx.

SUMMARY AND CONCLUSIONS

A technique for closure of the mucous membrane over the postoperative tonsil fossa fulfills the primary and basic precepts of good surgery: (1) control of hemorrhage, (2) elimination of dead space, and (3) the covering of mucous membrane of the denuded surface to allow healing by primary intention. Advantages of the technique are (1) added safety for the patient, (2) a shorter postoperative period, (3) less difficult recovery, and (4) elimination of the threat of hemorrhage, except when trauma occurs.

26 Strathallen Park (7).

3. Emerson, E. B., Jr.: Simple Device for Tracheobronchial Aspiration, J. A. M. A. **153**: 920-921 (Nov. 7) 1953.

COTTON COLLAR

A PHYSICAL THERAPEUTIC AGENT

Philip Lewin, M.D., Chicago

Many therapeutic collars have been designed over a period of years. Most of them are satisfactory. The one described here is simple, comfortable, and effective. The first definite therapeutic collars were made by Hugh Owen Thomas of Liverpool and Schanz of Dresden. Dr. J. O. Wallace of Philadelphia described a collar that he used in the treatment of dislocations of the cervical vertebrae. I found it very useful for other conditions and fashioned mine along Wallace's lines (fig. 1). I always have a supply on hand, firmly rolled, wrapped in cellophane, and sealed with colored cellophane tape. It is a necessary supply in my office.

The collar is useful as a first aid measure. It is helpful in taking roentgenograms in cases of acute injuries with or without deformity. In all serious injuries to the head or neck, a collar should be applied before the injured person is moved from the scene of the accident, whether it is on the road, on a battlefield, on the farm, or on a football field. I have used it in cases of arthritis, rheumatoid myositis (fibrositis), brachial neuropathy, radiculitis, the neck-shoulder-hand syndrome, muscle injuries, and subluxation of vertebral articular facets. It is especially useful in acute injuries such as occur in diving, in auto accidents, and when heavy objects strike the head or neck. It is helpful in infections, exposure to cold and dampness, neurological lesions, poliomyelitis, and in postoperative care. I have used it in follow-up care in cases in which casts or braces were formerly used.

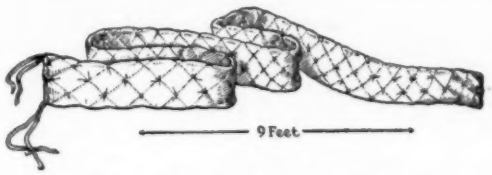


Fig. 1.—Cotton collar used for the support of the neck.

I have used it many times in torticollis of the newborn, both before and after operation, with remarkable results. In several cases, it has helped to correct a condition that previously would have required surgery. It is useful in cases of certain ear conditions, occipital neuritis, and painful swallowing. It can be used in conjunction with the Jackson pillow or head traction, or with the Tractolator. It makes the patient more comfortable while he is getting well.

The benefits of the collar include (1) prevention of further injury, (2) protection against drafts of air, (3) the ability of the collar to retain body heat, (4) comfort, and (5) production of mild traction. It is also a reminder to the patient to be careful.

Fig. 2.—Cotton collar used in the treatment of brachial neuritis. (Lewin, P., in Principles and Practice of Physical Therapy, Mock, H. E., Pemberton, R., and Coulter, J. S., editors, Hagerstown, Md., W. F. Prior and Company, Inc., 1934, vol. 2.)

A regular collar is 9 ft. long. It is 3 in. wide at the narrow end and 6 in. wide at the wide end. The wide end has four long tapes for binding. The materials are Silkaline and hospital cotton. Two layers of material enclose the cotton. The edges are sewed flat. The surfaces are quilted. Large, medium, and small sizes should be kept on hand. I use white exclusively. The collar is washable.

The physician should apply the collar the first time as a demonstration, preferably in front of a mirror. The first two turns should be fairly loose. Then a slight increase

in compression is brought about as subsequent turns are applied. When all turns have been made, the four tapes are tied. The collar is pressed down below the chin and the ears (fig. 2). The collar exerts a protective, resilient, compressive, and distractive force.

When the collar is removed, it should be rolled up very tightly with the tapes included in the first roll. Then it is sealed with cellophane tape or a rubber band until it is used again. The periods of time that the patient wears the collar depend on the local situation and the phase of the condition for which the collar is prescribed. Many of my patients wear the collar practically 24 hours a day. Clinical evidence substantiates the statement that the support and protection are comfortable, helpful, and healthful. No claims are made of any curative value, but strong claims are made for its protective and comforting value.

55 E. Washington (2).

MAGNIFYING SPECTACLES

CONVENIENT DIAGNOSTIC AID

Richard L. Sutton, Jr., M.D.
and
Paul R. O'Brien, Kansas City, Mo.

In his daily work a physician must look at many lesions not only from a distance but also from a close position. He must also under some circumstances, use various types of microscopy.[1] The essay of Waring [2] is an especially engaging and informative presentation of the diagnostic value of looking. We would be the last to question the value of observing a patient from across the room,[3] but one of us (R. L. S.) is a dermatologist and is concerned time after time with the relatively minute appearances of visible abnormality.

The spectacles illustrated in the figure simplify the work. They eliminate the need for repeatedly taking off and putting on glasses, or for picking up a magnifier, or for owning special equipment to provide magnification when minor dermatological surgery is performed. The lenses of the spectacles themselves are standard bifocals. The accessory lenses, readily flipped down into the line of vision or up and out of the way, carry a correction of + 5 D. spheres combined with 15 degree prisms, bases in. The magnification is about 2.5 power.

The accessory lens assembly is mounted on two five-barrel hinges, soldered at the centers of the tops of the eye wires. Connecting the hinges is a gold-filled rod with a knurled knob at one end. The supplementary lenses are mounted in toric strap end pieces connected to the hinges with U-shaped rods that allow unobstructed vision through the upper part of the spectacles.

Spherical correction of the accessory lenses does the accommodating and prisms do the converging so that the eyes are relaxed. The balance of 5 D. spheres with 15 degree prisms is seen to be proper if one draws on graph paper the paths of the light rays. Some chromatic aberration is inevitable with so much prismatic correction.

Spectacles with supplementary lenses (+ 5.00 D. with 15△ base in) on a movable assembly, for convenience in changing from ordinary correction to 2.5 power magnification.

This minor defect is minimized by correctly collimating the lenses so that their planes are perpendicular to the lines of sight, and so that their centers coincide with the centers of light rays from object to pupils.

One may use (1) the ordinary close bifocal correction below the accessory lenses, (2) the magnification provided by distance correction with + 5 D. accessory lenses added, or (3) the ordinary distance correction of the upper portion of the spectacle lenses. The spectacles as illustrated have proved satisfactory.

411 Nichols Rd. (Dr. Sutton).

From the Department of Dermatology and Syphilology, University of Kansas Medical Center (Dr. Sutton).

1. Duryee, A. W., and Wright, I. S.: Studies of Human Capillaries: Present Day Technique for Study of Human Capillaries, Am. J. M. Sc. **185**: 664-673 (May) 1933. Goldman, L., and Younker, W.: Studies in Microscopy of Surface of Skin: Preliminary Report of Technics, J. Invest. Dermat. **9**: 11-16 (July) 1947. Lyon, W. W.: Adaptation of Low Power Pocket Microscopes for Cutaneous Examination, ibid. **16**: 201-204 (April) 1951. Gilje, O.; O'Leary, P. A., and Baldes, E. J.: Capillary Microscopic Examination in Skin Diseases, A. M. A. Arch. Dermat. & Syph. **68**: 136-147 (Aug.) 1953.

2. Waring, J. J.: Physical Examination: Helps and Hindrances, Ann. Int. Med. **28**: 15-27 (Jan.) 1948.

3. Sutton, R. L., and Sutton, R. L., Jr.: Handbook of Diseases of the Skin, St. Louis, C. V. Mosby Company, 1949, p. 38.

CALCULATOR FOR ESTIMATING EARLY FLUID REQUIREMENTS IN BURNS

Lieut. Col. Curtis P. Artz
and
Capt. Eric Reiss, (MC), U. S. Army

The importance of proper fluid therapy in the initial management of burned patients has been emphasized repeatedly.[1] Since fluid and electrolyte losses following burns are related to the size of the patient and the percentage of body surface burned, various formulas have been evolved for the estimation of the amount and type of fluid required in the first 48 hours after injury. Almost all surgeons use some type of formula or rule as a guide to early fluid requirements. The principal advantage of formulas is that they permit rapid estimation of fluid requirements; their principal disadvantage is that they may be misinterpreted as a substitute for clinical judgment and close observation of the patient. It must be stressed forcefully that in burns, as in all fluid problems,

From the Surgical Research Unit, Brooke Army Medical Center, Fort Sam Houston, Texas.

The calculator described in this paper can be obtained from Baxter Laboratories, Morton Grove, Ill.

1. (*a*) Cope, O., and Moore, F. D.: The Redistribution of Body Water and the Fluid Therapy of the Burned Patient, Ann. Surg. **126**: 1010, 1947. (*b*) Evans, E. I., and others: Fluid and Electrolyte Requirements in Severe Burns, ibid. **135**: 804, 1952. (*c*) Moyer, C. A.: Recent Advances in the Chemical Supportive Therapy of Thermal Injury, Texas State J. Med. **45**: 635, 1949. (*d*) Reiss, E., and others: Fluid and Electrolyte Balance in Burns, J. A. M. A. **152**: 1309 (Aug. 1) 1953.

the response of the individual patient ultimately determines the details of fluid therapy.

A few years ago, a formula for fluid therapy evolved from studies in the Metabolic Section of the Surgical Research Unit. This formula is a slight modification of the regimen proposed by Evans and his co-workers.[1b] It has been used extensively in the clinical management of a large number of burned patients and has proved useful. During the first 24 hours after a burn, the patient requires colloid solutions (blood, plasma expanders, or plasma)

2nd
degree
burns
Fluid
Calculator
for
BURNS
WHEN BLOOD IS NOT AVAILABLE PLASMA OR PLASMA EXPANDER SHOULD BE SUBSTITUTED FOR THE BLOOD REQUIREMENT
REQUIREMENTS FOR SECOND 24 HOURS ARE ABOUT ½ TO ¾ THE AMOUNT FOR FIRST 24 HOURS
RATE OF ADMINISTRATION
½ OF TOTAL REQUIREMENT IN FIRST 8 HOURS
¼ IN SECOND 8 HOURS
¼ IN THIRD 8 HOURS
PREPARED FROM DATA SUPPLIED BY THE SURGICAL RESEARCH UNIT, BROOKE ARMY MEDICAL CENTER

Fig. 1.—Face of calculator used for estimating initial fluid requirements in second degree burns.

in an amount equal to 0.5 cc. times his body weight in kilograms times the per cent of body surface burned. He requires electrolyte solutions (lactated Ringer's solution or isotonic sodium chloride solution) in an amount equal to 1.5 cc. times his body weight in kilograms times the per cent of body surface burned. In addition 2,000 cc. of dextrose in water is required. In the second 24 hours, the patient again requires the administration of 2,000 cc. of dextrose in water. In addition, he will require one-half to three-fourths of the amount of the colloid and electrolyte solutions given during the first 24 hours.

In most partial thickness (second degree) burns, the colloid requirement should be fulfilled by plasma or a plasma volume expander. In full thickness (third degree) burns, most of the colloid requirement should be fulfilled by blood. For the electrolyte requirement, lactated Ringer's solution is preferable to isotonic sodium chloride solution. Most severely burned patients tend toward a metabolic acidosis, which is increased by the administration of large amounts of the chloride ion.

In the event of a large number of burn casualties such as might be expected after an atomic disaster, computation of the actual requirements of each patient could be time-consuming. To simplify estimation of fluid requirements, a fluid calculator or circular slide rule based on our formula has been devised. The calculator is made of celluloid and conveniently fits into a pocket (fig. 1 and 2). The weight of the patient in pounds and the per cent of body surface burned is set on one scale, and the amounts of colloid solution, electrolyte solution, and dextrose in water that are needed can be read from another scale. The face of the calculator for second degree burns is shown in figure 1. The suggested rate of fluid administration is one-half of the total requirement in the first eight hours. When blood is not available, a plasma expander or plasma should be substituted for the blood requirement. The other face of the calculator records the approximate fluid requirements in third degree burns (fig. 2). The urinary output should be maintained at 30 to 50 cc. per hour. A chart of the rule of nines for estimation of percentage of body surface burned is outlined on the calculator. Fluid requirements for burns involving more than 50% of the body surface should be calculated as though only 50% had been burned. Special caution must be taken to prevent overestimation of percentage of burn—a very common mistake. The calculator has gradations for computing requirements for burns from 10 to 50% in patients that weigh from 40 to 220 lb. (18.1 to 99 kg.). For patients who have mixed second and third degree burns, in-between approximation can be made by consulting both sides of the calculator.

In elderly patients and in patients who have pulmonary damage, smaller quantities of fluid than the calculated amount should be given. If a severely burned patient is admitted several hours after injury, it may be necessary to give additional quantities of colloid material. In deep, extensive burns, the administration of blood should be accompanied by the simultaneous administration of electrolyte solution in another vein.

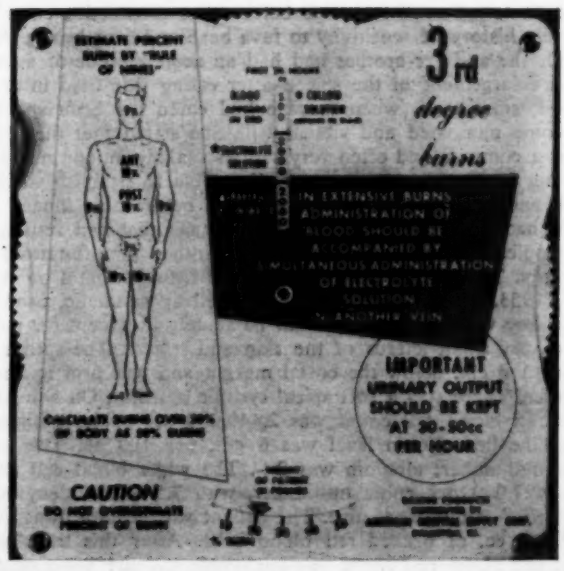


Fig. 2.—Face of calculator used for estimating initial fluid requirements in third degree burns.

The calculator is designed for estimation of fluids for the first 24 and 48 hours only. Fluid therapy after that time must be judged in accordance with the clinical condition of the patient.[1d]

SUMMARY

A pocket-sized celluloid calculator indicates the amount of fluids required during the first 24 or 48 hours after a burn. The amounts and types of fluids recommended on the calculator are computed in accordance

with a formula that has proved valuable in the clinical management of a large number of burned patients. It is believed that this calculator will serve as a rapid reference in the management of a large number of casualties and for the physician who sees only an occasional burn. This simple device does not replace clinical judgment but offers an easy, rapid guide to the estimation of replacement fluids.

TREATMENT OF FAVISM WITH CORTISONE

Arnold H. Becker, M.D., Bristol, Conn.

The characteristic signs and symptoms of favism are pallor (usually abrupt in onset), jaundice, splenomegaly, malaise, fever, hemoglobinuria, and, the *sine qua non*, a history of ingestion of the bean of Vicia fava. This bean, variously known as fava bean, broad bean, horse bean, and Italian bean, constitutes a staple in the diet of many families of Italian ethnic background.[1] The clinical syndrome referred to here is produced only when the bean is eaten by a sensitized person. To date, only seven cases of favism in children and three in adults have been reported in the United States, despite the popularity of this food. This hemolytic syndrome has been reported frequently in the Italian literature.[2]

REPORT OF A CASE

A 2-year-old boy of Italian extraction was seen on April 24, 1953, because of lassitude and increasing pallor of two days' duration. The urine was syrupy and dark. When questioned about fava bean, the patient's mother stated that he had been fed "a few beans" two days before. She provided a complete family history of sensitivity to fava bean and fava bean pollen. Both she and her brother had had an acute episode of anemia and enlargement of the spleen after eating this food in childhood; since then, whenever she had eaten the bean she had become nauseated and violently ill. She stated that the illness was a common and often very serious malady among members of her family in Italy. It was not possible to establish whether the patient had eaten any fava bean before this illness. He had had mild eczema at 6 months of age that had responded to topical treatment. There were no other manifestations of allergy. The patient was admitted to Bristol Hospital on April 24, 1953. Physical examination showed an apathetic, cooperative boy who did not appear to be acutely ill except for pallor and very slight icterus of the skin and scleras. The spleen extended 4 cm. below the costal margin and was firm and nontender. There was a soft apical systolic murmur. On admission the red blood cell count was 2,440,000 per cubic millimeter, and the hemoglobin level was 6 gm. per 100 cc. The urine was red-amber; albumin was 2+. The white blood cell count was 22,000 per cubic millimeter, with 7.5% reticulocytes. A Coombs' test was negative. The patient was given a transfusion of 150 cc. of packed red blood cells. After this transfusion the red blood cell count was unaltered, and the urine steadily became darker. Another transfusion of 150 cc. of packed red blood cells was given on the next morning. The urine passed during the day became very dark brown, and the patient was clinically unimproved. Cortisone therapy was started that evening; the patient received 10 mg. every 6 hours for four doses, then 10 mg. every 8 hours for three doses, then 10 mg. every 12 hours for two doses, and a final dose of 10 mg. one day later. On the morning after cortisone therapy was instituted the urine began to clear; one day later it was normal. The patient's appetite and interest had returned, and his spleen was smaller. The red blood cell count began to rise; the hemoglobin level rose to 9.8 gm. per 100 cc. on April 30, and 10 days later it was 12 gm. per 100 cc. The patient has since maintained a normal hemogram, taking only the usual vitamin supplements.

COMMENT

The use of cortisone in treating this disease is a natural extension of its use in relieving other hemolytic and allergic conditions. Whether favism is truly an allergic manifestation is yet an unsettled issue; however, the evidence that it is a sensitivity phenomenon is considerable. Murano [3] studied 11 family trees for three generations and found that 19% of the persons studied had favism and 54%, allergic conditions. He concluded that the incidence of favism follows the mendelian law. Positive skin tests and passive transfer tests have often been demonstrated by Italian physicians, but careful corroborative immunologic studies have failed in the United States. The bulk of evidence in the literature favors the opinion that favism is a hypersensitivity phenomenon. The effectiveness of cortisone in a single case is not evidence of a sensitization mechanism, but it is suggestive.

The apparent rarity of favism has aroused speculation. Two factors appear to account for its infrequent diagnosis: (1) the diminished opportunity for pollen sensitization in the United States, where the vegetable is chiefly grown in large fields rather than in home gardens,[4] and (2) misdiagnosis as Lederer's anemia or other obscure conditions. Because recovery is the rule, mild cases may go unnoticed. When a history of fava bean ingestion is sought and elicited, the diagnosis is easily made; arrest of the hemolytic process appears to be steadily effected by cortisone. The use of cortisone or corticotropic substance merits evaluation in a larger series of cases. Supportive treatment, particularly transfusion, remains an important therapeutic need. Although spontaneous recovery is the rule, death occurs in 8% of cases; therefore, the role of the bean of Vicia fava in producing an acute hemolytic disease deserves to be made known to physicians.

SUMMARY

In a case of favism in a 2-year-old boy, the eighth case to be reported in the American literature, the use of cortisone proved to be an effective therapeutic measure.

124 Main St.

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Chemotherapy of Tuberculosis.—The reasons for suggesting that isoniazid rather than streptomycin be kept as a reserve agent stems from the fact that, although isoniazid gives excellent results in acute pneumonic tuberculosis, the drug is also able to diffuse into dense caseous and necrotic lesions in high concentrations, especially in the lungs, and possibly more readily than streptomycin. It would seem desirable, therefore, to withhold the more diffusible agent as a second line of defense. Undoubtedly occasions will arise when it will be preferable to use isoniazid plus streptomycin plus PAS relatively early in the course of the disease, in the hope that the process will respond to antibacterial treatment alone. It is questionable, however, if this should be done as a routine method of treatment in the present stage of knowledge.—E. H. Rubin, M.D., Therapy of Pulmonary Tuberculosis with Special Reference to Antimicrobial Treatment and Resection, *Annals of Internal Medicine*, March, 1954.

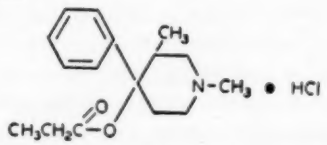
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional article has been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Alphaprodine Hydrochloride.—Nisentil Hydrochloride (Hoffmann-LaRoche).—$C_{16}H_{23}NO_2.HCl$.—M.W. 297.82.—1,3-Dimethyl-4-phenyl-4-piperidyl propionate hydrochloride.—The structural formula of alphaprodine hydrochloride may be represented as follows:



Actions and Uses.—Alphaprodine hydrochloride is a short-acting synthetic, narcotic analgesic agent chemically resembling meperidine, but unrelated chemically to morphine. The analgesic action of alphaprodine, like that of morphine, is associated with euphoria, mild sedation, slight dizziness, itching, and diaphoresis, but is accompanied by less nausea, vomiting, or respiratory depression. Its analgesic and depressant actions are somewhat less intense, but more prompt and of shorter duration, than those of morphine. The relatively short duration of analgesic and sedative effect minimizes the hazard of respiratory depression resulting from the drug; but, if barbiturates are used concomitantly, the tendency to depressed respiration in the newborn may be increased because alphaprodine hydrochloride passes freely across the placental barrier. Its rapid onset and relatively short action permit considerable flexibility of administration. It is suited primarily for temporary analgesia in obstetrics, for urologic examinations and procedures (particularly cystoscopy), preoperatively in surgery, and for minor surgical procedures, especially in orthopedics, ophthalmology, rhinology, and laryngology. The drug may be used in conjunction with nerve block or inhalation anesthesia and with barbiturate sedation when allowance is made for the added depressant effect.

Alphaprodine hydrochloride produces little or no cumulative effect, but tolerance that involves the liability of addiction can develop. For this reason, the drug is subject to restriction as a narcotic. Although it is intended only for temporary analgesia, the potential addiction liability of its prolonged use for other purposes or by addicts as a substitute for other narcotic analgesics should be kept in mind.

Dosage.—Alphaprodine hydrochloride is administered in solution by subcutaneous injection; intravenous injection may be employed when very rapid and brief analgesia is desired. The average initial subcutaneous dose is 40 to 60 mg., depending on the patient's weight; similar doses may be repeated at two hour intervals. A dose of 40 mg. is suggested for a patient weighing 50 kg. (110 lb.). Such a dose usually produces analgesia within 5 minutes and lasts for an average of two hours. In obstetrics, the initial dose may be given at any time after the cervix has begun to dilate. Depression of fetal respiration resulting from the drug is largely obviated if the last subcutaneous dose is administered at least two hours prior to delivery. The average intravenous dose ranges from 20 to 30 mg., usually produces analgesia within 1 to 2 minutes, and lasts 30 to 60 minutes. In the event of overdosage, nalorphine hydrochloride is an effective antidote.

Tests and Standards.—

Physical Properties: Alphaprodine hydrochloride is a white, crystalline, bitter powder with an amine-like odor, m.p. 218-221°. It is freely soluble in alcohol, in chloroform, and in water and very slightly soluble in ether. Alphaprodine hydrochloride is stable to air, light, and heat. The pH of a 1% solution is 4.5-5.2.

Identity Tests: Dissolve about 0.1 gm. of alphaprodine hydrochloride in 10 ml. of water and divide the solution into two portions. To one portion add 1 ml. of sodium hydroxide T.S.: the solution turns milky. To the second portion add 2 drops of nitric acid and 1 ml. of silver nitrate T.S.: a white precipitate forms, which is insoluble in diluted nitric acid but soluble in diluted ammonia solution *(presence of chloride).*

Place a few milligrams of alphaprodine hydrochloride on a spot plate and add a drop of formaldehyde-sulfuric acid solution (1 drop of 40% formaldehyde in 1 ml. of sulfuric acid): an orange-red color develops.

Place in a 50 ml. beaker about 0.15 gm. of alphaprodine hydrochloride, dissolve in 5 ml. of water, and add 12 ml. of a saturated solution of picric acid. Allow the mixture to stand at room temperature for about one hour, collect the precipitate on a filter, wash thoroughly with cold water, and dry in a vacuum over phosphorus pentoxide for five hours: the picrate melts at 213-218°. *(Caution!* Picrates may be explosive. Do not use ordinary liquid-bath melting point apparatus.)

Purity Tests: Dissolve 1 gm. of alphaprodine hydrochloride in 23 ml. of water, add 2 ml. of diluted acetic acid, and run a *U.S.P. heavy metals test:* the amount of heavy metals does not exceed 20 ppm.

Dry about 1 gm. of alphaprodine hydrochloride, accurately weighed, at 105° for 4 hours: the loss in weight does not exceed 0.5%.

Char about 1 gm. of alphaprodine hydrochloride, accurately weighed, cool the residue, add 1 ml. of sulfuric acid, heat cautiously until evolution of sulfur trioxide ceases, ignite, cool, and weigh: the residue does not exceed 0.1%.

Assay: (Alphaprodine) Transfer to a 60 ml. separatory funnel about 0.2 gm. of alphaprodine hydrochloride, accurately weighed. Add 15 ml. of water and 5 ml. of 10% sodium hydroxide, and mix. Extract the liberated base with six 20 ml. portions of ether. Wash the combined ether extracts with three 5 ml. portions of saturated sodium chloride solution. Filter the ether mixture into a 150 ml. beaker through an ether-moistened pledget of cotton. Evaporate the ether at room temperature in a current of warm air. Add exactly 10 ml. of 0.1 *N* hydrochloric acid and dissolve the residue with heat if necessary. Using a 10 ml. buret for the alkali and methyl red T.S. as an indicator, titrate the solution with 0.1 *N* sodium hydroxide. Each milliliter of 0.1 *N* hydrochloric acid is equivalent to 0.02614 gm. of alphaprodine and 0.02978 gm. of alphaprodine hydrochloride. The amount of alphaprodine is not less than 85.1 nor more than 90.4%, equivalent to not less than 97 nor more than 103% of alphaprodine hydrochloride.

Dosage Forms of Alphaprodine Hydrochloride

SOLUTIONS. *Identity Tests:* Transfer to a 60 ml. separatory funnel a volume of solution equivalent to about 0.35 gm. of alphaprodine hydrochloride, add 5 ml. of 10% sodium hydroxide, and extract the solution with three 20 ml. portions of ether. Evaporate the ether extracts and dissolve the residue in about 15 ml. of 0.1 *N* hydrochloric acid. The solution responds to the colorimetric and picrate identity tests for the active ingredient in the monograph for alphaprodine hydrochloride.

Assay: (Alphaprodine) Transfer to a 60 ml. separatory funnel an amount of solution, accurately measured, equivalent to about 0.2 gm. of alphaprodine hydrochloride. Add 5 ml. of 10% sodium hydroxide and proceed as directed in the extraction method for the assay of alphaprodine in the monograph for alphaprodine hydrochloride starting with, "Extract the liberated base . . . ." Each milliliter of 0.1 *N* hydrochloric acid is equivalent to 0.02978 gm. of alphaprodine hydrochloride. The amount of alphaprodine hydrochloride is not less than 93 nor more than 107% of the labeled amount.

Hoffmann-LaRoche, Inc., Nutley 10, N. J.

Solution Nisentil Hydrochloride 4%: 1 cc. ampuls. A solution containing 40 mg. of alphaprodine hydrochloride in each cubic centimeter. Preserved with 0.45% phenol.

Solution Nisentil Hydrochloride 6%: 1 cc. ampuls and 10 cc. vials. A solution containing 60 mg. of alphaprodine hydrochloride in each cubic centimeter. Preserved with 0.45% phenol. U. S. patent 2,498,433. U. S. trademark 519,750.

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MEDIASTINAL GRANULOMA

Storey and Lyons [1] reported in 1951 six instances of mediastinal "tuberculoma" observed in a relatively short period of time. They expressed the opinion that this particular lesion, hitherto considered as extremely rare, was probably much commoner than the analysis of literature would suggest. Further, they felt that all isolated mediastinal tumors should be removed because some of them would prove malignant and others, even though not malignant, would eventually produce pressure symptoms on the important neighboring structures. These lesions always presented themselves as distinct tumors. An accurate diagnosis could be made only after a thoracotomy with removal or biopsy of the mass. No association with lymphadenopathy was observed in any of the reported cases. Histologically these tumors presented a characteristic picture of a chronic granuloma.

Review of the literature reveals that Grace [2] in 1942 was first to report a removal of a "tuberculoma" with excellent result. Blades and Dugan [3] in 1944 reported the removal of a "tuberculoma" of the posterior mediastinum. The histological examination of the removed tissue in their case revealed an occasional acid-fast bacillus morphologically resembling the tubercle bacillus. Samson and associates [4] added in 1950 four cases to four already reported. They concluded that exploration is necessary in nearly all cases, especially for the surgeon who believes that unilateral mediastinal masses should be subjected to early surgical intervention. Histological studies of the removed tumors presented a picture of fibrosis, round cell infiltration, epithelioid cell reaction, multinucleated giant cells, and caseation necrosis. They did not feel that the tuberculous nature of these lesions has been unequivocally proved.

Kunkel and his co-workers [5] were able to cull from literature 16 cases of mediastinal granuloma thus far proved at thoracotomy, to which they added 16 patients operated on in the last few years at the Mayo Clinic. Apparently mediastinal granulomas cause few or no symptoms, since 10 of their patients had none and 3 had only minimal symptoms. In all 13 the lesion was detected in general roentgenographic surveys. The radiographic features of their cases closely resembled those already reported in the literature. The lesion presented itself as a well-circumscribed mass with an oval or smoothly lobulated outline, usually located alongside of the trachea and protruding into the right half of the thorax. Partial calcification in the periphery was frequently noted in these lesions, which were essentially cysts with thin, fibrous walls. Some of these tumors had a central calcific stippled effect. Eleven of the tumors on gross examination proved to be cystic lesions varying from the size of a walnut to that of an orange. Gross calcification was often a prominent feature. The tumors were yellow or white and contained a soft necrotic central mass, which resembled wet, crushed chalk or cottage cheese. On microscopic examination the tumors were found to consist of many small tubercles composed of epithelioid cells, central caseous material, foreign body cells, and Langhans' type of giant cells at the periphery. Calcification lining portions of the walls was common.

These authors emphasize that all bacteriological studies in this series of cases failed to reveal the cause of the granuloma. They are of the opinion that even in the case reported by Blades and Dugan the finding of acid-fast bacilli could be an instance of an acid-fast saprophyte that is morphologically indistinguishable from Mycobacterium tuberculosis. Although the natural course of this lesion, "mediastinal granuloma," is not known, it was believed by the authors that resection or excision at the time of operation should be performed, even though the removal of these in most instances would present difficult technical problems for the surgeon because of their location and adhesion to adjacent structures.

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5. Kunkel, W. M., Jr.; Clagett, O. T., and McDonald, J. R.: Mediastinal Granulomas, J. Thoracic Surg. **27**: 565-574 (June) 1954.

AIR TRAVEL AND HEART DISEASE

Physicians are frequently asked by patients with heart disease whether adverse physiological effects are produced by flying. Uppermost in the patient's mind are two major considerations: (1) will flight be harmful and (2) would it be preferable for him to seek other means of transportation? In most instances, Graybiel [1] points out, the question is readily answered: in the absence of serious illness, the stresses that might be encountered during flight are easily borne, the problem narrowing down to one of passenger comfort, while in the case of patients with serious illness, a direct reply can be given only after a careful evaluation of the factors responsible for producing travel stress.

Early in commercial aviation it was feared that many patients with heart disease might suffer en route. This fear was largely allayed as the result of a report published in 1941 that showed that out of a total of 7 million passengers carried by five major airlines only three deaths occurred aloft, these being ascribed to heart failure, while two deaths considered to be of cardiac origin occurred shortly after the passengers deplaned. The conclusion "if you can walk you may fly" was a sound generalization that subsequent experience confirmed in a large measure.

1. Graybiel, A.: Air Travel and Heart Disease, Mod. Concepts Cardiovas. Dis. **23**: 217 (March) 1954.

In 1947 the Civil Aeronautics Administration requested the scheduled air carriers to supply information on all incidents of death and unconsciousness in flight. The incidence of attacks of unconsciousness was found to be 6 for every 100,000 passengers; there was one death aloft for every one and one-half million passengers carried, with the leading cause of death being cardiovascular disease. A significantly greater number of deaths occurred in the nonpressured type of cabin when compared with the pressurized type, although altitudinal differences were insignificant. From this data two conclusions can be drawn: first, the death rate and the number of attacks of unconsciousness during flight are very low; and second, the fact that such incidents are fewer in pressurized than in nonpressurized airplanes is proof that flying stress is a factor, albeit small.

In the opinion of some investigators, patients with cardiac decompensation or severe hypertension should not fly; others, however, believe there is no valid objection to air travel by cardiac patients, who readily adjust to low oxygen tension in the inhaled air. In general, patients who have well-compensated valvular disease or mild uncomplicated hypertension can fly without risk. According to Kreinin,[2] patients with coronary heart disease should not fly for a considerable period after myocardial infarction. Otherwise, coronary heart disease should be handled as an individual problem. A person whose anginal attacks are easily induced or one with pronounced apprehension about flying, he believes, should be advised not to fly.

On the pressurized-cabin type of plane the occasional need for the administration of oxygen to persons with heart disease has almost reached the vanishing point. However, a physician can now exercise a choice and advise his ambulatory patients to use the pressurized-cabin type of air transportation, with comfortable assurance that they will complete the flight in safety and comfort without having to resort to the use of oxygen, which, however, should still be aboard and immediately available at all times for use in any anoxic emergency. As a matter of precaution, a person with heart disease should be advised not to engage passage on any type of airliner that does not have a supply of oxygen aboard for use by any passenger who may need it in an emergency, regardless of the "cabin altitude" to be flown.

PUBLIC EDUCATION IN CANCER CONTROL

Effective cancer control depends on a continuous program of public education, the object of which is to substitute optimism and intelligence for ignorance and fear.[1] Even if it were possible to give every member of society a complete periodic physical examination, this would not insure the recognition of warning signs early in the course of the disease. To accomplish this every potential patient must be taught to cooperate. The public must be told what the early symptoms and signs are, what should be done when these are discovered, and what can be done to treat cancer. This can be done through leaflets, lectures, movies, articles in newspapers or popular magazines, and radio or television presentations. In using all such methods success depends on presenting only as much information as can be useful to a layman and presenting it in a calm manner and in the simplest terms.[2] Indirectly, much public education is accomplished through the education of professional groups (physicians, dentists, medical students, and nurses).

Some have objected to public education in cancer detection on the ground that it creates carcinophobia, but in a population in which there is hardly a person who has not known several persons who have died of cancer the fear is already present and can best be combatted by bringing the subject out in the open and emphasizing the hopeful aspects of the problem.[3] Others object that public education leads to a procession of introspective patients clamoring for needless physical examinations, but still others ask if it is not better to make 10 unnecessary examinations than to have the disease in one patient go too long undiagnosed. It has also been objected that the early signs of cancer are so varied and uncertain that popular education is impossible, but perhaps this objection can be met by concentrating the educational program on a few important signs of the more easily treated forms of cancer, such as a painless lump in the breast, irregular uterine bleeding in patients past 40, or a sore on lip, tongue, or mouth that does not heal in two weeks.

Although the part played by public education cannot easily be separated from other factors in the general cancer control program, there appears to be definite evidence that the incidence of preventable cancer is being reduced.[4] Some rates that appear at first to show no improvement are found, when adjustments for the proportion of persons in the various age groups are made, to indicate a steady decline.[5] A more specific evaluation of the results of public education may be obtained through surveys of public knowledge. Such a survey[6] made in 1949 in Waltham, Mass., revealed that about 75% of those questioned believed cancer to be curable; 80% believed that it was not communicable; 81.6% knew that surgery, x-ray, and radium were accepted forms of treatment; 87.5% stated that they would be willing for the public to know that cancer existed in their family; about 50% believed that cancer was not inherited; about 50% were not able to list any of the seven widely-publicized danger signals; and 25% could list two or more of these. Although these figures were not compared with those of any earlier survey, they would seem to indicate an advanced state of public enlightenment along some lines and a great need for renewed educational efforts along other lines. A new survey in this same area for comparison would be of great value, as it would give more definite evidence of the efficacy of the program. The family physician is usually the first to see the cancer patient. He is thus in a strategic position to recognize the early signs of cancer and to aid in educating his patients to report such signs without delay.

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ORGANIZATION SECTION

THE SCIENTIFIC EXHIBIT AT SAN FRANCISCO

The Scientific Exhibit at the San Francisco Meeting maintained its usual high order of excellence and attracted throngs of physicians throughout the week. Nearly a thousand persons—physicians, scientists, nurses, technicians—participated in the demonstrations, spending many long and weary hours in the performance of their tasks. The medical profession is indeed grateful to them for their preseverance and faithfulness. There were 222 exhibits, of which 206 were presented in conjunction with section programs, in the Civic Auditorium on the first and second floors and in corridors.

The several special features were very popular. The blood bank exhibit was in charge of John K. Upton, M.D., and his associates from the Blood Bank Commission of the California Medical Association. The exhibit on preceptorships in the undergraduate education for general practice was the first exhibit by the Section on General Practice under the Wyeth Fund. The fracture exhibit was presented by the Special Exhibit Committee on Fractures, of which Gordon M. Morrison, M.D., Boston, was chairman, where five booths were in continuous operation throughout the week, with more than 40 demonstrators participating. The special exhibit on fresh pathology was arranged by the Section on Pathology and Physiology with the cooperation of the California Pathologists Association. Nearly a hundred pathologists, including guest demonstrators, assisted with the demonstrations. Gerson R. Biskind, M.D., San Francisco, was chairman of the committee. The special exhibit on pulmonary function testing was arranged by the Section on Diseases of the Chest in cooperation with various other interested groups. A large number of competent demonstrators took part. The quiz corner was a new feature carried out by the editors of the A. M. A. special journals, and Mr. G. S. Cooper of the American Medical Association was in charge. The question and answer conference on cardiovascular diseases, which ran continuously all through the week, was presented with the cooperation of the American Heart Association and the Section on Internal Medicine. Howard P. Lewis, M.D., Portland, Ore., was chairman of the group of nearly 100 panel members.

The Section on Anesthesiology had five exhibits, of which one received an award. The section representative was Scott M. Smith, M.D., Salt Lake City.

The Section on Dermatology and Syphilology had eight exhibits, of which three received awards, including a bronze medal. The section representative was Samuel M. Bluefarb, M.D., Chicago.

The Section on Diseases of the Chest showed 10 exhibits, of which 3 received awards. In addition there were two other exhibits in the miscellaneous group, as well as the special exhibit on pulmonary function testing sponsored by the Section. The section representative was Edwin R. Levine, M.D., Chicago.

The Section on Experimental Medicine and Therapeutics presented 14 exhibits. There were two awards. The section representative was Joseph F. Ross, M.D., Boston.

The Section on Gastroenterology and Proctology had 11 exhibits with 2 awards. The section representatives were William H. Dearing Jr., M.D., Rochester, Minn., for gastroenterology and J. P. Nesselrod, M.D., Evanston, Ill., for proctology.

The Section on General Practice presented 12 exhibits, of which 2 received awards. In addition the Section organized the special exhibit on the preceptorship in undergraduate education for general practice. Charles E. McArthur, M.D., Olympia, Wash., was the section representative.

The Section on Internal Medicine presented 22 exhibits. There were four awards including two medals. In addition the Section participated in the question and answer conference on cardiovascular diseases. John S. Lawrence, M.D., Los Angeles, was the section representative.

The Section on Laryngology, Otology, and Rhinology showed 10 exhibits. There were two awards. The section representative was Walter E. Heck, M.D., San Francisco.

The Section on Military Medicine presented eight exhibits, of which three received awards including a bronze medal. Brig. Gen. Rawley E. Chambers, M.C., U. S. Army, was the section representative.

The Section on Nervous and Mental Diseases had 10 exhibits, with 2 awards. The section representative was G. Wilse Robinson Jr., M.D., Kansas City, Mo.

The Section on Obstetrics and Gynecology presented 11 exhibits, of which 2 received awards. Frederick H. Falls, M.D., Chicago, was the section representative.

The Section on Ophthalmology presented a group of eight exhibits, there being two awards. The section exhibit committee consisted of William F. Hughes Jr., M.D., Chicago, chairman, Walter H. Fink, M.D., Minneapolis, and Donald J. Lyle, M.D., Cincinnati.

The Section on Orthopedic Surgery presented 10 exhibits, of which 2 received awards. The section representative was J. Vernon Luck, M.D., Los Angeles.

The Section on Pathology and Physiology had 11 exhibits. There were three awards including a gold medal. In addition, the Section cooperated in the special exhibit on fresh pathology. Frank B. Queen, M.D., Portland, Ore., was section representative.

The Section on Pediatrics presented 11 exhibits, of which 2 received awards. The section representative was F. Thomas Mitchell, M.D., Memphis, Tenn.

The Section on Physical Medicine and Rehabilitation had seven exhibits with two awards. The section representative was Donald A. Covalt, M.D., New York.

The Section on Preventive and Industrial Medicine and Public Health presented eight exhibits. There were two awards. Paul A. Davis, M.D., Akron, Ohio, was the section representative.

The Section on Radiology presented seven exhibits, with awards going to two of them. Richard H. Chamberlain, M.D., Philadelphia, was the section representative.

The Section on Surgery, General and Abdominal presented 14 exhibits. There were four awards, including a gold medal. John N. Mulholland, M.D., New York, was the section representative.

The Section on Urology had 10 exhibits, of which 2 received awards. The section exhibit committee consisted of Roger W. Barnes, M.D., Los Angeles, chairman, George H. Ewell, M.D., Madison, Wis., and Norris J. Heckel, M.D., Chicago.

There were eight additional exhibits in the miscellaneous group, of which one received an award.

Motion pictures were shown in Masonic Temple under the direction of the Committee on Medical Motion Pictures; a total of 36 films were presented. With the exception of the pictures shown on Friday morning, each film was shown twice during the week. In addition, a motion picture program was presented Wednesday evening at the Palace Hotel to an overflow audience of nearly a thousand at which three films were shown with discussion of each by the author.

The Committee on Awards had a difficult task, but each member worked hard and faithfully. The complete report of the Committee on Awards follows:

AWARDS FOR SCIENTIFIC EXHIBITS

Hektoen Award.—The Hektoen award—comprising three gold, silver, and bronze medals—presented for exhibits of original investigation that are judged on the basis of originality and excellence of presentation was awarded as follows:

GOLD MEDAL to Michael E. De Bakey, Denton A. Cooley, and Oscar Creech Jr., Veterans Administration, Methodist, and Jefferson Davis hospitals, and Baylor University College of Medicine, Houston, Texas, for the exhibit on Aneurysms and Thrombo-Obliterative Disease of the Aorta: Surgical Considerations.

SILVER MEDAL to Gerald R. Cooper and Emanuel E. Mandel, Communicable Disease Center, U. S. Public Health Service, and

Emory University School of Medicine, Atlanta, Ga., for the exhibit on Paper Electrophoresis in Clinical Diagnosis.

BRONZE MEDAL to Aaron Bunsen Lerner, Thomas B. Fitzpatrick, Kazuo Shizume, and Howard S. Mason, University of Oregon Medical School, Portland, Ore., for the exhibit on The Melanocyte Stimulating Hormone.

Billings Medal.—The Billings Medal winners, who received gold, silver, and bronze medals for exhibits that do not exemplify purely experimental studies but are judged on the basis of excellence of correlating facts and excellence of presentation, were:

GOLD MEDAL to Emma S. Moss, Albert L. McQuown, and Robert S. Cooke, Charity Hospital of Louisiana and Louisiana State University School of Medicine, New Orleans, and Our Lady of the Lake Sanitarium, Baton Rouge, La., for the exhibit on Fungous Diseases.

SILVER MEDAL to Donald C. Balfour Jr., Telfer B. Reynolds, William P. Mikkelsen, Arthur C. Pattison, and Milton R. Hales, University of Southern California School of Medicine and Los Angeles County Hospital, Los Angeles, for the exhibit on Portal Hypertension.

BRONZE MEDAL to W. W. Ayres, R. N. Grant, and G. C. Beattie, Bureau of Medicine and Surgery, Department of the Navy, Washington, D. C., for the exhibit on Naval Medical Service with the First Marine Division in Korea—Medical Installations, Casualty Evacuation, Arterial Injuries, General Surgery, Orthopedic Surgery, and Blast Injuries.

The Committee on Awards of the Scientific Exhibit in its report also cited outstanding exhibits not eligible for awards:

"There is a group of exhibits, by their nature ineligible for awards. The Committee on Awards wishes to make mention and pay tribute to the exhibits on Blood Banks, Preceptorship in Undergraduate Education for General Practice, Fractures, the Quiz Corner and Reference Library, Fresh Pathology and Pulmonary Function Testing, and to the Question and Answer Conference on Cardiovascular Diseases."

The committee also praised the cooperation of exhibitors from all parts of the United States, who make the Scientific Exhibit possible, saying:

"With the cooperation of so many exhibitors, bringing wonderfully assembled and educationally informative presentations, the Scientific Exhibit has become one of the outstanding and most sought-after features of the entire Scientific Assembly."

Here is the list of exhibits in each Scientific Section that were awarded Certificates of Merit and Honorable Mention:

Anesthesiology.—Honorable Mention to Daniel C. Moore, Raymond F. Hain, Arthur A. Ward Jr., and L. Donald Bridenbaugh, the Mason Clinic and University of Washington School of Medicine, Seattle, for the exhibit on The Importance of the Perineural Space in Nerve Blocking.

Dermatology and Syphilology.—Certificate of Merit to Helen Ollendorff Curth, College of Physicians and Surgeons, Columbia University, New York, for the exhibit on Dermatoses and Malignant Internal Tumors.

Honorable Mention to Florante C. Bocobo, E. Richard Harrell, Arthur C. Curtis, and Walter D. Block, University of Michigan Hospital, Ann Arbor, Mich., for the exhibit on Antifungal Activity of the Stilbenes, Nitrostyrenes, and Related Compounds.

Diseases of the Chest.—Certificate of Merit to G. V. Brindley Jr., Scott and White Clinic, Scott and White Memorial Hospitals, and the Scott, Sherwood, and Brindley Foundation, Temple, Texas, for the exhibit on Bronchogenic Carcinoma Simulating Benign Pulmonary Diseases.

Honorable Mention to Gladys L. Hobby and Tulita F. Lenart, Chas. Pfizer & Co., Inc., Brooklyn, N. Y., and Oscar Auerbach, Maurice J. Small, and John Comer, East Orange Veterans Administration Hospital, East Orange, N. J., for the exhibit on Viability of Tubercle Bacilli in Tuberculous Lesions Following Chemotherapy.

Honorable Mention to George D. Geckeler, Charles P. Bailey, and Raymond C. Truex, Cardiovascular Research Institute of Hahnemann Medical College and Hospital, Philadelphia, for the exhibit on Rheumatic Aortic Valvular Disease.

Experimental Medicine and Therapeutics.—Certificate of Merit to W. R. Kirtley, S. O. Waife, A. Staub, M. Root, and O. M. Helmer, Lilly Research Laboratories and Indianapolis General Hospital, Indianapolis, for the exhibit on Glucagon, the Hyperglycemic-Glycogenolytic Factor of the Pancreas.

Honorable Mention to Olof H. Pearson, Charles D. West, Min Chiu Li, John P. MacLean, and Norman Treves, Memorial Center for Cancer and Allied Diseases, New York, for the exhibit on Endocrine Therapy of Metastatic Breast Cancer.

Gastroenterology and Proctology.—Certificate of Merit to Gordon McHardy, Louisiana State University School of Medicine and Browne McHardy Clinic, New Orleans, for the exhibit on Antibiotic Amebacides.

Honorable Mention to Paul L. Shallenberger, Donald M. Clough, and Henry M. Perry, Guthrie Clinic, Sayre, Pa., for the exhibit on The Story of Gallstones.

General Practice.—Certificate of Merit to William L. Lowrie, W. E. Redfern, and Brock E. Brush, Henry Ford Hospital, Detroit, for the exhibit on The Conservative Management of Diabetic Foot Complications.

Honorable Mention to Bacon F. Chow, Johns Hopkins University, Baltimore, for the exhibit on Vitamin B_{12} and Aging.

Internal Medicine.—Certificate of Merit to William C. Moloney and Robert Lange, Atomic Bomb Casualty Commission, Hiroshima, Japan, and Robert Sinskey, Duke University Medical School, Durham, N. C., for the exhibit on Late Effects of Irradiation in Atomic Bomb Survivors—Observations on Leukemia and the Eye.

Honorable Mention to Edward H. Morgan and Richard W. Yore, the Mason Clinic, Seattle, for the exhibit on Illustrated Instructions for Patients with Emphysema, Asthmatic Bronchitis, and Bronchiectasis.

The Committee on Awards wishes to make Special Mention of the exhibit on The Cardiac Silhouette which is presented by J. Scott Butterworth, American Heart Association and the New York University Post-Graduate Medical School, New York. This exhibit received the Billings Gold Medal at the New York Meeting of the American Medical Association in June, 1953.

Laryngology, Otology, and Rhinology.—Certificate of Merit to J. Dudley Singleton, Louis E. Adin Jr., Ralph S. Clayton, Lewis B. Waters, and Patricia O'Neill, Southwestern Medical School of the University of Texas, Dallas, for the exhibit on The Temporal Bone—An Anatomic and Clinical Study.

Honorable Mention to Maurice H. Cottle, Chicago Medical School, Chicago, Frederick W. Beck, Oakland, Calif., George G. Fischer, Wilmette, Ill., Harvey C. Gunderson, Toledo, Ohio, Robert M. Hansen, Portland, Ore., Roland M. Loring, Chicago, and Russell I. Williams, Cheyenne, Wyo., for the exhibit on Structure and Functions of the External Nasal Pyramid.

Military Medicine.—Certificate of Merit to Curtis P. Artz, Alvin Bronwell, Yoshio Sako, John M. Howard, and J. Kemp Davis, Army Medical Service Graduate School, Walter Reed Army Medical Center, Washington, D. C., for the exhibit on The Initial Management of the Severely Wounded.

Honorable Mention to Harry L. Berman, Leonard H. Seitzman, and Edward J. Jahnke, Walter Reed Army Hospital, Washington, D. C., for the exhibit on Arteriography in Vascular Injuries.

Nervous and Mental Diseases.—Certificate of Merit to Gordon L. Brownell and William H. Sweet, Massachusetts General Hospital, Boston, for the exhibit on Localization of Brain Tumors with Positron Emitters.

Honorable Mention to Mark D. Altschule and Willis Bower, McLean Hospital, Waverly, Mass., and Leonard Cook, Philadelphia, for the exhibit on Psychiatric Experience with a New Agent, Chlorpromazine.

Obstetrics and Gynecology.—Certificate of Merit to Frederick H. Falls, University of Illinois College of Medicine and Charlotte S. Holt, Illinois State Department of Public Health, Chicago, for the exhibit on Medical Complications of Pregnancy.

Honorable Mention to Herbert F. Traut, Ernest W. Page, Edmund W. Overstreet, Ralph C. Benson, Earl B. King, Eugene D. Finkle, Gilbert A. Webb, Ralph Sweet, and Rudolph Skarda, University of California School of Medicine, San Francisco, for the exhibit of The Human Placenta.

Ophthalmology.—Certificate of Merit to Aeleta N. Barber, G. N. Ronstrom, and R. J. Muelling Jr., Louisiana State University School of Medicine, New Orleans, for the exhibit on Development of the Visual Pathway in Humans.

Honorable Mention to David O. Harrington and Milton Flocks, University of California School of Medicine and the Veterans Administration Hospital at Fort Miley, San Francisco, for the exhibit on The Multiple Pattern Method of Visual Field Examination.

Orthopedic Surgery.—Certificate of Merit to E. H. Soule, R. K. Ghormley, P. R. Lipscomb, J. C. Ivins, and E. D. Henderson, Mayo Clinic and Mayo Foundation, Rochester, Minn., for the exhibit on Primary Tumors of the Soft Tissues of the Extremities Exclusive of Epithelial Tumors—An Analysis of 500 Consecutive Cases.

Honorable Mention to Gerald G. Gill and Hugh L. White, San Francisco, and John G. Manning, Pasadena, Calif., for the exhibit on Spondylolisthesis and Spina Bifida Occulta—Surgical Treatment Without Spinal Fusion.

Pathology and Physiology.—Certificate of Merit to John B. Hazard, George W. Crile Jr., R. S. Dinsmore, W. A. Hawk, and R. E. Kenyon, Cleveland Clinic, Cleveland, for the exhibit on Neoplasms of the Thyroid.

Honorable Mention to Hans F. Smetana and Frank B. Johnson, Armed Forces Institute of Pathology, Washington, D. C., for the exhibit on Histopathologic Effects of Plasma Expanders.

Pediatrics.—Certificate of Merit to Harold D. Lynch and W. D. Snively Jr., Evansville, Ind., and W. E. Henrickson, Poplar Bluff, Mo., for the exhibit on the Submarginal Child.

Honorable Mention to Roy F. Goddard, James Clark, and V. Ray Bennett, Lovelace Clinic, Albuquerque, N. Mex., for the exhibit on Newer Concepts of Infant Resuscitation and Positive Pressure Therapy in Pediatrics.

Physical Medicine and Rehabilitation.—Certificate of Merit to Thomas J. Canty and Bruce E. Bradley, United States Naval Hospital, Oakland, Calif., for the exhibit on Amputee Rehabilitation—New Developments and Research in Artificial Limbs.

Honorable Mention to O. Leonard Huddleston and William Henderson, California Rehabilitation Center, Santa Monica, and Vallejo, Calif., for the exhibit on Intensive Activity Program and Mechanical Assistive Devices in Rehabilitation of Physically Disabled Patients.

Preventive and Industrial Medicine and Public Health.—Certificate of Merit to E. W. Dennis, D. A. Berberian, and Frederick Coulston, Sterling-Winthrop Research Institute, Rensselaer, N. Y., for the exhibit on Chemotherapy and Host-Parasite Relationship.

Honorable Mention to Robert F. Bell and James J. Waring, University of Colorado Medical Center, Denver, for the exhibit on Pneumoconiosis.

Radiology.—Certificate of Merit to Clenmer M. Peck, Forest V. Schumacher, Aubrey O. Hampton, Emergency Hospital, Washington, D. C., and John V. Niiranen, U. S. Navy, Washington, D. C., for the exhibit on Resilient Plastic Replicas of Surgical Pathology and Their Clinical Application.

Honorable Mention to Leo G. Rigler and John C. Watson, University of Minnesota Hospitals, Minneapolis, for the exhibit on A Rapid Film-Changing Device for Conventional Radiography.

Surgery, General and Abdominal.—Certificate of Merit to John W. Kirklin, H. J. C. Swan, H. B. Burchell, R. L. Parker, J. E. Edwards, E. H. Wood, Andre Bruwer, J. W. DuShane, and A. H. Bulbulian, Mayo Clinic and Mayo Foundation, Rochester, Minn., for the exhibit on Anatomic and Physiological Problems in the Treatment of Atrial Septal Defect.

Honorable Mention to Claude S. Beck and David S. Leighninger, University Hospitals, Cleveland, for the exhibit on Operations for Coronary Artery Disease.

Honorable Mention to James Barron, L. S. Fallis, and J. L. Sawyer, Henry Ford Hospital, Detroit, for the exhibit on Tube Feeding.

Urology.—Certificate of Merit to Heron Singher, Ortho Research Foundation, Raritan, N. J., and Edward T. Tyler, Los Angeles County Harbor General Hospital, Los Angeles, for the exhibit on Clinical Features and Chemical Morphology of Semen and Some of Its Variations.

Honorable Mention to James D. Niebel and Maurice I. P. Redor, Stanford University School of Medicine, San Francisco, for the exhibit on Clinicopathologic Aspects of Nonobstructive Pyelonephritis.

Miscellaneous Group.—Honorable Mention to R. J. Anderson and Armand E. Brodeur, U. S. Department of Health, Education, and Welfare, Public Health Service, and William B. Walsh, Georgetown University Medical School, Washington, D. C., for the exhibit on Breath Sounds on Tape.

Committee on Awards: William F. Mengert, Dallas, Texas, chairman; Daniel L. Sexton, St. Louis; Grant H. Laing, Chicago; Francis M. Forster, Washington, D. C.; and John H. Lamb, Oklahoma City.

REGISTRATION AT THE ANNUAL MEETING SAN FRANCISCO, JUNE 21-25, 1954

Alabama	43	Montana	30
Alaska	5	Nebraska	91
Arizona	109	Nevada	50
Arkansas	30	New Hampshire	11
California	6,553	New Jersey	90
Canal Zone	3	New Mexico	46
Colorado	130	New York	389
Connecticut	47	North Carolina	50
Delaware	9	North Dakota	21
District of Columbia	136	Ohio	320
Florida	100	Oklahoma	63
Georgia	46	Oregon	230
Hawaii	45	Pennsylvania	284
Idaho	38	Puerto Rico	6
Illinois	523	Rhode Island	15
Indiana	178	South Carolina	38
Iowa	86	South Dakota	30
Kansas	97	Tennessee	63
Kentucky	40	Texas	313
Louisiana	85	Utah	99
Maine	6	Vermont	25
Maryland	101	Virginia	108
Massachusetts	120	Washington	255
Michigan	229	West Virginia	49
Minnesota	184	Wisconsin	106
Mississippi	18	Wyoming	15
Missouri	157	Total	11,915

OTHER COUNTRIES

Canada	73	Israel	1
Argentina	7	Italy	2
Australia	1	Japan	4
Austria	1	Korea	3
Bahamas	1	Mexico	7
Brazil	1	Netherlands	1
Costa Rica	2	Philippine Islands	9
Cuba	4	Portugal	2
Denmark	1	South Africa	2
England	5	Spain	1
Finland	1	Sweden	2
France	2	Switzerland	2
Germany	2	Thailand	1
Guam	1	Total	148
India	3		11,915
Iran	2	Grand Total	12,063
Iraq	4		

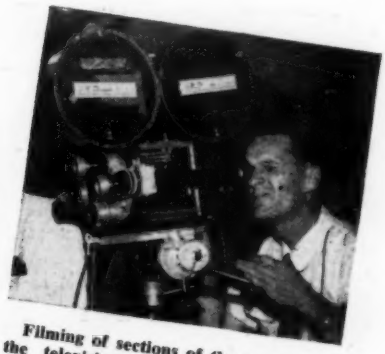
REGISTRATION BY SECTIONS

Anesthesiology	300
Dermatology & Syphilology	275
Diseases of the Chest	291
Experimental Medicine & Therapeutics	77
Gastroenterology & Proctology	177
General Practice	2,736
Internal Medicine	1,766
Laryngology, Otology, & Rhinology	310
Military Medicine	187
Nervous & Mental Diseases	394
Obstetrics & Gynecology	601
Ophthalmology	529
Orthopedic Surgery	351
Pathology & Physiology	308
Pediatrics	444
Physical Medicine & Rehabilitation	74
Preventive & Industrial Medicine & Public Health	224
Radiology	333
Surgery, General & Abdominal	1,333
Urology	268
Session on Allergy	40
Session on Legal Medicine	12
More than one Section or no Section checked	1,033
Total	12,063

SAN FRANCISCO SCENES

A small contingent of the many members of the press covering the meeting. Press headquarters were in the Palace Hotel, with additional press facilities in the Auditorium.

Capacity audience at the showing of three medical motion pictures, which were presented for the first time before this group.



Filming of sections of the program for the television presentation "March of Medicine."

The immediate past president of the A.M.A., Dr. Edward J. McCormick (right) and the newly installed President, Dr. Walter B. Martin.

Dr. Dwight H. Murray, Chairman of the A.M.A. Board of Trustees, administering the Presidential Oath to Dr. Walter B. Martin (right).

The Billings silver medal was presented to D. C. Balfour Jr., T. B. Reynolds, W. P. Mikkelsen, A. C. Pattison, and M. R. Hales of Los Angeles for their exhibit on Portal Hypertension.

Billings bronze medal winning exhibit entitled "Naval Medical Service with the First Marine Division in Korea."

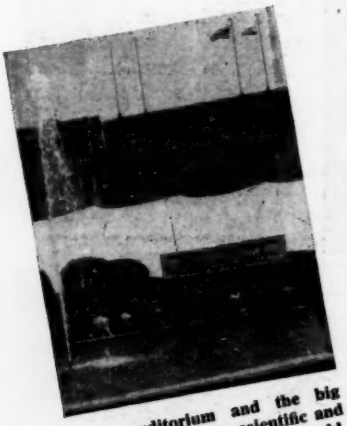
Left: Miss Ethel Peterson, an amputee, displaying her typewriting dexterity to Luther Bergdall of the National Society for Crippled Children and Adults, Inc., sponsors of the exhibit.

Right: Dr. J. J. Stein, Chairman of the Committee on Military Affairs and Civil Defense, demonstrating the handling of radioactive materials.

Drs. D. B. Allman (left) and F. J. L. Blasingame, who were reelected to the Board of Trustees.

Dr. Walter Biering, a past president of the A.M.A., congratulates the incoming president, Dr. Walter B. Martin, after his inauguration. Mrs. Martin is at right.

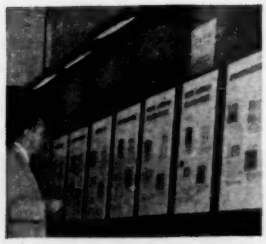
The exhibit on the Melanocyte Stimulating Hormone, by A. B. Lerner, T. B. Fitzpatrick, Kazuo Shizume, and H. S. Mason, winner of the Hektoen bronze medal.



The auditorium and the big tent, where both the scientific and the technical exhibits where held.

The House of Delegates at the opening session of the 103rd Annual Meeting.

Exhibit on Paper Electrophoresis in Clinical Diagnosis by G. R. Cooper and E. E. Mandel, winner of the Hektoen silver medal.



The Fungus Diseases, an exhibit by E. S. Moss, A. J. McQuown, and R. S. Cooke, which was awarded the Billings gold medal.

The exhibit on Aneurysms and Thrombo-obliterative Disease of the Aorta, by M. E. DeBakey, D. A. Cooley, and Oscar Creech Jr., winner of the Hektoen gold medal.

State Auxiliary presidents accepting the awards for securing the most subscriptions to Today's Health. From left to right, Mrs. A. M. Okelberry, Utah; Mrs. B. P. Storts, Arizona; Mrs. Joseph Waxsey, Kansas; Mr. R. A. Enlow, director of Today's Health circulation; and Mrs. R. F. Stover, Miami, Fla., National Auxiliary Today's Health Chairman.

SAN FRANCISCO SCENES

The recipient of the A.M.A.'s Distinguished Service award, Dr. W. W. Babcock (right), being congratulated by Dr. Gunnar Gundersen, A.M.A. trustee, of LaCrosse, Wis.

The House of Delegates of the American Medical Association at the opening session at the Palace Hotel.

Dr. George F. Lull (right) accepting check for $100,000, a contribution from the California Medical Association to the American Medical Education Foundation. Dr. Arlo L. Morrison, President of California Medical Association, presented the check.

Exhibit demonstrating the variance in weight in monkeys when their diets are supplemented by vitamin B₆.

Dr. and Mrs. Walter B. Martin, Norfolk, Va., on the eve of his inauguration as 108th President of the American Medical Association.

Exhibit of fresh pathology specimens. For this popular exhibit, fresh pathological specimens were brought in daily from hospitals in the San Francisco area.

Dr. Clark Bailey (left), Vice President, and Dr. Elmer Hess, President-Elect.

Dr. George F. Lull accepting a contribution to the American Medical Education Foundation from the Woman's Auxiliary to the A.M.A. Pictured here with Dr. Lull are (left to right) Mrs. Frank Gastineau, chairman of the Auxiliary AMEF Committee; Mrs. L. J. Schaefer, retiring Auxiliary president; and Mrs. George Turner, incoming Auxiliary president.

PROCEEDINGS OF THE SAN FRANCISCO MEETING

ABSTRACT OF PROCEEDINGS OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION AT THE ANNUAL MEETING IN SAN FRANCISCO, JUNE 21-25, 1954

(Continued from page 1081)

Report of the Council on Medical Education and Hospitals

In the temporary absence of Dr. H. G. Weiskotten, Chairman, Dr. Harvey B. Stone, Senior Member, presented the following report of the Council on Medical Education and Hospitals, which was referred to the Reference Committee on Medical Education and Hospitals:

The Council on Medical Education and Hospitals requests the approval of the House of Delegates for the following proposed revisions in its Essentials of Approved Residencies and Fellowships:

INTERNAL MEDICINE

(Page 18 to Quantitative Requirements on page 19)

Residencies and fellowships in internal medicine should be organized on a broad basis to furnish instruction in the various specialties which combine to form the foundation of practice in internal medicine. Accordingly, the service should not be limited entirely to internal medicine and its subdivisions, allergy, cardiovascular diseases, gastroenterology, metabolic diseases, contagious diseases, and pulmonary diseases, but should include instruction in psychiatry and neurology, and might well include a reasonable amount of training in dermatology and pediatrics, now organized as independent specialties.

In institutions offering residencies and fellowships in internal medicine, and in the special fields of allergy, cardiovascular disease, gastroenterology, or pulmonary diseases, emphasis should be placed on the educational features of the service and residents should receive regular instruction from members of the staff in methods of clinical study and diagnostic and therapeutic procedures. Of particular importance is the study of etiology, pathogenesis, symptomatology, and course of the various diseases so that the residents may develop skill and accuracy in diagnosis as well as a mature judgment and resourcefulness in therapy.

Under the supervision of qualified members of the staff the residents should assume individual responsibility in actual case management. They should also be required to correlate clinical studies with postmortem pathology, review medical literature, and take an active part in weekly teaching rounds, departmental seminars and clinical-pathological conferences.

OCCUPATIONAL MEDICINE

(New Section)

A residency in occupational medicine comprises a period of specialized training of two to three years duration, not less than one year of which is carried out in supervised practice in an industrial medical organization. Ordinarily these programs should be conducted under the sponsorship of an educational institution. They may be organized in a school of medicine, a school of public health or an associated graduate school, in which the facilities of a university as a whole are available for intramural instruction. Extramural training should be provided by an organization affiliated with the educational institution and having a satisfactory medical service. The intramural and extramural phases may be carried on simultaneously or as separate periods.

I. CONTENT OF INTRAMURAL TRAINING PROGRAM

A. *Basic Disciplines.* The basic disciplines may vary in their content to some degree to include matters of special significance to the industrial physician, in accordance with the availability of facilities for instruction in various institutions of learning. Courses should be offered to include the following:

1. Industrial health practice, which concerns itself with the medical problems and practices of industry, as well as other activities of the industrial physician in his professional, advisory, and administrative relationships to industrial employees in all categories, to his immediate and more general professional associates, to the hygienic authorities, and to management.

2. Industrial hygiene, under which term are included all measures for the determination of the significance and extent of occupational stresses and hazards, and for the development and application of means of controlling such stresses and hazards, so as to promote and maintain industrial health.

3. Physiology and other basic sciences with particular reference to the manner in which the occupation and environment affect man.

4. Epidemiology and biostatistics and their application to the health problems of the industrial population.

B. *Related Fields.*

1. Special fields of medicine such as mental health, rehabilitation, and gerontology as they relate to occupational medicine.

2. Legal and insurance aspects of industrial medical practice.

3. History, structure, and functions of industry.

4. Social studies (human relations) including such subjects as personnel relations, industrial relations, labor relations, and public relations.

C. *Clinical Training.* Clinical training requires well-developed clinical facilities in a medical center in which a well-staffed outpatient dispensary, ample and well-staffed inpatient services, and a variety and a reasonable volume of patients and problems from industry are available for study. Organized and well-staffed clinics in industrial establishments, as well as many other organized medical services in the community may be utilized. Clinical training should provide experience in at least the following areas:

1. Medical appraisal of abilities and disabilities in relation to the requirements of job, job placement and adjustment of worker to job.

2. Management of occupational injury and disease to include etiology, pathology, diagnosis, prognosis, therapy, rehabilitation, and prevention.

3. Medical appraisal of the individual with particular reference to quantitative standards and compensation for disability.

4. Rehabilitation. Adequate training in rehabilitation can best be provided in an institution in which there is a properly staffed department of rehabilitation. Well-developed services in medicine, surgery, and the medical and surgical specialties should be available. The efforts of these services and the department of rehabilitation should be coordinated in achieving the objective of the rehabilitative process, the return of the industrial casualty to a suitable and useful occupation.

D. *Research.* Investigations of the industrial environment and the response of individuals to it, studies of new materials and new sources of energy, and training in the significance of research are an essential part of professional instruction.

The resident (or fellow) may be required to prepare a thesis worthy of publication based on his own study.

II. TYPE AND CONTENT OF TRAINING IN INDUSTRY

A. *General Type and Duration of Residency in Industry.* The resident (or fellow) must serve for a year, preferably in continuous service, in one or more industrial medical organizations approved for scope and quality of service.

B. *Professional Personnel and Facilities.*

1. Personnel. An industrial medical organization which participates in the training of residents in occupational medicine should be under the direction of a competent physician having position and authority in the organization commensurate with his responsibilities, including that of assuming a high level of ethical conduct and practice within the medical department. All of the activities of the industry relating to the health of employees, industrial hygiene and sanitation, and the hygienic problems of the community as derived from the industry, should lie clearly within the authority or area of consultation of the physician in charge.

The staff of the medical department, including nurses and technical assistants, should be adequate in numbers and competent to perform the work which is required of them, and should have such relationship to the chief of the medical staff, and such functions in the performance of the work of the medical department, as are in keeping with sound professional standards.

The local professional relationships of the medical staff shall be such as to insure appropriate liaison with private physicians of the employees. The services of fully qualified consultants in specialized fields of medical and surgical practice should be utilized as necessary.

2. Facilities. The quarters and facilities of the medical department should be adequate in location, arrangement, and equipment to provide freedom from noise; to insure comfort, cleanliness, and orderliness in the conduct of the medical work; and, especially, to yield complete privacy for interviews and medical examinations and for the maintenance of wholly confidential medical records.

Laboratories, equipment for the conduct of clinical and environmental observations and investigations, and appropriate reference books and periodicals, shall be available within the medical or other plant facilities, or in such proximity elsewhere as adequately to meet the needs of the practice of medicine and industrial hygiene.

3. Industrial Medical Practice. The type of medical practice conducted by the industrial medical department shall be of a high professional quality, and shall extend into all of the fields of medical activity that are appropriate to the needs of the industry concerned.

The medical examinations and the medical records should be such as to reveal the hygienic status of the population of the plant or industry, in a reasonably effective manner, with respect to injury, illness, and disease of nonoccupational, as well as of occupational origin. They should also be adequate in respect to the medical problems of the individual employee.

The information on the respective occupations, and on the hygienic problems and hazards associated with specific occupations and operations within the plant or industry, should be comprehensive and up to date, and the means by which such information is kept current, through reports, trips of inspection, analytical and other environmental data, should be part of the regular mechanisms of the medical operations and relationships within the industrial organization.

4. Adaptation and Utilization of Personnel and Facilities for Medical Instruction. In addition to the general adequacy of the medical personnel and facilities for the performance of their necessary duties, the conditions within the medical department and the industrial organization which it serves must be such as to provide time for the training of medical residents. The competence of the preceptors within industry and the affiliation of the personnel of the medical department with the institution responsible for professional instruction must be such as to insure the fulfillment of an educational function, rather than to provide a means of delegating the less exacting and less responsible work of the medical department to a subordinate in training.

PROCTOLOGY

(Entire Section Rewritten, page 40)

The scope of training in proctology should include experience with and responsibility for patients with disease and abnormalities of the anus, rectum, and colon. An adequate number and variety of proctologic patients should be available. Under ordinary circumstances, a general hospital, to support a proctologic residency should have annual admissions to the proctologic department of at least 200, including a minimum of 50 patients with disease of the large bowel.

The program should be under the direction of a well-qualified proctologist, preferably one who is certified by the American Board of Proctology. Those members of the attending staff who assist in supervising the resident's work should have had acceptable training in the specialty, should demonstrate an interest and ability in teaching and should enjoy high professional standing. In some hospitals, where the number of men on the staff who have had advanced training in proctology is limited, it may be desirable to assign responsibility for the supervision of the training program to recognized proctologists on a consulting basis. In such instances, it is expected that the consultant will devote sufficient time to the residency program to assure its effectiveness. In all instances, it is imperative that the head of the department be available to assume full responsibility for supervision of the work of the department.

The resident should have access to the records of all proctologic cases in the hospital. He should be held responsible for all histories, physical examinations, ordering of laboratory and roentgen ray studies, preoperative orders, a preoperative summary for the operative record, assisting at time of operation, postoperative orders, dictation of operative records of operations performed by him, progress notes, and postoperative dressings and care. He should make daily rounds with the head of the department, as well as his own individual rounds. He shall assist in the outpatient department. He should participate in the consultations with other departments so as to supplement the volume of work on his service. He should assist in the organized educational program, such as the teaching of interns, students, and nurses. He shall prepare material for and assist at proctologic clinics and demonstrations.

Attendance should be required at all autopsies, clinicopathological conferences, hospital staff meetings, departmental meetings, general surgical ward rounds, follow-up clinics, and surgical or medical clinics pertaining to proctologic subjects. The resident should spend sufficient time in the department of anesthesia to become familiar with anesthetic procedures such as local infiltration, sacral block, caudal block, and spinal block.

Increased responsibilities should be delegated to the resident as his ability is demonstrated, and he shall be given opportunity to perform minor and major surgical procedures under supervision in order that he may develop surgical judgment and increase his surgical skill. He should keep a personal file of all cases on which he was the first assistant or the responsible surgeon.

The importance of complete studies of all patients must be emphasized. The head of the department must provide personal instruction and conduct teaching rounds, departmental conferences, and seminars. There should be frequent informal discussions and demonstrations of techniques. Research activities in the fields of experimental medicine, experimental surgery, and the basic sciences should be encouraged.

It is recommended that comprehensive summaries of medical literature, or statistical analyses based on clinical case records or a thesis should be prepared by a resident before he completes his service. Careful direction and supervision of this study should be provided by a member of the staff.

Radiological training shall include the demonstration of current roentgenograms for correlation with the pathological, physiological, or clinical subjects, as well as study by the resident, in conjunction with the roentgenologist, of all roentgenograms on patients for whom he is responsible and observation and discussion of radiological therapy if available.

Board Requirements.—A candidate for an approved proctologic residency or a precepteeship shall be a graduate of a medical school approved by the Council on Medical Education and Hospitals and shall have served an internship of at least one year in a hospital acceptable to that Council. In addition he shall have had specific training in general surgery after the internship. The proctologist in charge of a residency shall obtain from the American Board of Proctology written confirmation that an applicant's preliminary training in general surgery meets the requirements of the American Board of Proctology. This training shall include instruction in the basic sciences as set forth under the section "General Requirements."

An applicant may qualify for examination by the Board by any one of three methods.

a. Two years of approved general surgical residency and two years of approved residency in proctology (colon and anorectal surgery).

b. Three years of approved general surgical residency and two years of approved precepteeship in proctology (colon and anorectal surgery).

c. Two years of approved residency in general surgery and three years of approved precepteeship in proctology (colon and anorectal surgery).

REPORT OF REFERENCE COMMITTEE ON MEDICAL EDUCATION AND HOSPITALS

Dr. W. Andrew Bunten, Chairman, presented the following report, which was adopted:

Report of the Council on Medical Education and Hospitals.—In its report, the Council on Medical Education and Hospitals presented certain changes which it recommends for inclusion in the Essentials of Approved Residencies and Fellowships. These changes concern approved residencies in internal medicine, occupational medicine, and proctology and merely involve clarification and amplification of requirements for residency training in these fields. From a consideration of the report and on the basis of statements made before your reference committee by the Chairman of the Council and others, your committee recommends the adoption of the proposed revisions.

Birthday Message to Dr. Nathan B. Van Etten

It was announced by the Speaker that Tuesday, June 22, would be the 88th birthday of Dr. Nathan B. Van Etten, a former Speaker of the House and a Past President of the Association, and on motion of Dr. J. Mather Pfeiffenberger, Illinois, duly seconded and carried, the House voted unanimously to send Dr. Van Etten a telegram of congratulations.

Report of Council on Medical Service

Dr. Elmer Hess, Chairman, submitted the following portion of the report of the Council on Medical Service, which was referred to the Reference Committee on Insurance and Medical Service:

Voluntary Health Insurance

The House of Delegates, on the recommendation of the Council on Medical Service, established a number of years ago certain Standards and Principles and a Seal of Acceptance for Voluntary Health Insurance Plans to protect the public against exploitation by unsound plans. These guides have now become well known and the original purpose of the seal of acceptance has thus been accomplished.

The Council has found it difficult to conduct the seal of acceptance program on a national level, entailing, as it does, a periodic review of the laws of the various states and constant checking to be certain that the standards are maintained in all particulars by each plan. The use of the seal under these circumstances might give the public an erroneous impression. For these reasons the Council recommends discontinuance of the seal of acceptance for voluntary health insurance plans. This action, of course, should in no way be interpreted as indicating that any plans using the seal have in any way failed to comply with these criteria. In the future, the Standards and Principles will be maintained as guides and recommendations for all groups operating or establishing plans. They may, of course, be revised from time to time. Any person purchasing or recommending any health insurance plan is advised to examine such plan in the light of these Standards and Principles. All state and county medical societies are urged to see that the public has every opportunity to become well informed on all types of voluntary health insurance for its (the public's) own protection.

Dr. Louis H. Orr II, member of the Council on Medical Service and Chairman of its Committee on Federal Medical Services, read the following remaining portions of the report of the Council, which also were referred to the Reference Committee on Insurance and Medical Service:

Progress Report on Veterans' Medical Care

Background.—In June, 1953, the House of Delegates adopted a policy statement urging new legislation with respect to the provision of medical care and hospitalization benefits for veterans in Veterans Administration and other Federal hospitals, which would limit such care to (*a*) veterans with peacetime or wartime service whose disabilities or diseases are service-incurred or aggravated; and (*b*) within the limits of existing facilities to veterans with wartime service suffering from tuberculosis or psychiatric or neurological disorders of non-service-connected origin, who are unable to defray the expenses of necessary hospitalization. The House was clear and specific in its recommendations and stressed "the fact that these recommendations do not suggest any limitation or impairment of the hospitalization or medical care now available to veterans who have become physically handicapped as a result of military service. We are in complete accord with that program."

The House was equally clear and specific in regard to the implementation of the policy statement when it said:

"that all of the facilities of the American Medical Association and its constituent state and county societies be employed immediately to disseminate background information and accurate statistical data in this regard. Every effort should be made to inform the profession and the public concerning the nature of the problem, the position of the American Medical Association and the reasons on which that position is predicated."

In December, 1953, the House of Delegates reaffirmed its stand on this subject in the words ". . . unless and until that policy is changed by action of this House, the only problem remaining is how to best promote and gain support for this problem."

This, then, is the core of the detailed policy statement and directive which was referred to the Council on Medical Service by the Board of Trustees and towards which the Committee on Federal Medical Services has channeled its major efforts during the past year. The committee met in New York in June after the policy was adopted to plan an informational program and has, since that time, proceeded to carry out this program. To understand the activities of the committee, let us look at the progress made during the past few months in relation to the June directives of the House.

Committee Activities.—In regard to employing "all of the facilities of the American Medical Association," the committee has sought and obtained the cooperation of various councils, committees, and bureaus within the Association. Of special assistance have been the staffs of the Committee on Legislation, which has compiled many of the statistics used in preparation of material, and the Department of Public Relations, which has prepared the publications used in the informational program. A "VA Medical Care Kit," prepared by this department, has been distributed to state and local committees on veterans care and has been a basic element in our efforts to date.

In regard to employing "all of the facilities of the state and county societies," the committee began its work in September, 1953, by calling together in Chicago representatives of all state associations to review the policy and discuss their role in its implementation. Next the committee arranged a series of nine regional conferences covering all areas of the United States.

The first regional conference was held in Dallas, Texas, on Nov. 6, 1953, and the final conference was held in Boston on March 28, 1954. Between these dates conferences were conducted in Atlanta, Ga., New York City, Washington, D. C., Denver, Portland, Ore., Omaha, and Indianapolis. During this period all state associations and large county medical societies were urged to establish committees on veterans medical care. As of May, 1954, 38 states have reported that such committees have been appointed and, in some states, representatives have reported similar committees at regional or county levels.

Finally, in regard to the directive to "disseminate background information and accurate statistical data to the profession and public on the nature of the problem, the position of the American Medical Association, and the reasons for that position," the committee has thus far confined its efforts to informing the profession. The program of information to the profession has been carried on through the regional conferences, talks at medical society meetings, articles in THE JOURNAL, and special pamphlets dealing with the subject. A number of state and county societies have also undertaken to inform their own membership. To assist in this effort, over 3,200 "VA Medical Care Kits" have been distributed to state and county society officers and committees and others who have requested them. In addition, the following quantities of literature have been sent to physicians and others, primarily in response to requests:

Factbook on VA Medical Care	16,000
Veterans Medical Care	2,300
Medical Profession's Stand on VA Medical Care	18,114
Must We Follow the VA Route to Socialized Medicine?	52,500

In order that the committee might keep state and county medical societies supplied with current information, a letter accompanied by an 11-page statistical outline was sent to the Chief Medical Director of the Department of Medicine and Surgery of the Veterans Administration in March, 1954, requesting up-to-date figures on the VA medical program. The director has acknowledged the receipt of this request and has agreed to supply the committee with the desired information. Sets of stereotypes relating to statistical data on veterans medical care have been prepared and used in whole or in part by 12 state medical journals and 28 county medical society bulletins. Film strips and 35 mm. slides have also been prepared and distributed to 27 state medical associations and three county medical societies.

In addition to following through on the program to inform the medical profession, the committee chairman and representatives of the Board of Trustees met with the Administrator of Veterans Affairs; representatives of the Board of Trustees have also met with representatives of the Special Medical Advisory Group of the VA and with representatives of the Veterans of Foreign Wars.

Regional Conferences.—The principal activity of the committee was, of course, the sponsoring of the nine regional conferences. Their purpose was threefold: (1) to discuss with representatives of the state associations the legislative and legal background of veterans medical care, the Association's present policy, and the reasons for this policy; (2) to discuss with these key men ways and means of informing other members of medical societies; and (3) to discuss existing opinion and situations within the various states. Discussion at each conference was led by a panel of American Medical Association representatives and a speaker from each region.

The conferences were well attended with all but one of the 48 state associations represented. Discussion during the question and answer periods was limited only by the time available. Some states differed in their approach to a program for informing their members, but all were agreed that such a step should have first priority. The committee has every reason to believe that these conferences served their purpose. The interest and cooperation shown by the state medical associations were certainly major factors in making the conferences successful. The Council wishes to express its appreciation and that of the Committee on Federal Medical Services to all of the state officers for their support. The hospitality extended by the host states in each area, the lively attention of the participants, and the many suggestions made to the committee were most helpful and welcome.

Since all of the participants were free to express their opinions, both as regards the policy and its implementation, it is natural that such expressions were frequent and varied. Some questioned the wisdom of engaging in any controversy with veterans organizations. Some doubted the chances of ever being successful in changing the law, even though this objective might be right in principle. Some thought that carrying out the policy would destroy the Veterans Administration hospital training program and that the effect of this would be felt in a reduced quality of care in the service-connected cases. A few disagreed with the policy to the extent that they believed it impractical to expect many communities to care for indigent veterans and argued, therefore, that the Veterans Administration hospitals should be open to this group. At one of the conferences "The Tennessee Plan for Veterans Medical Care" was presented and brought forth considerable discussion. The great majority of those attending the conferences, however, were in complete accord with the policy, the timing, and the method of approach and were in favor of proceeding with the program to inform the profession and the public. The conferees were also in general agreement that efforts should be made in this program to enlist the support of other community groups, to establish local liaison committees with veterans organizations, and to discuss personally the problems and data involved with members of Congress so that they might become aware of the existing situation.

The ultimate import of these conferences will not be realized until all, or at least most, of the states have organized their state committees and their county medical societies into effective units capable of carrying the informational program to the "grass roots" of medical organization.

Other Developments.—That progress has already been made is evident from a number of developments occurring since June, 1953.

Shortly after the American Medical Association adopted its position, the Veterans Administration revised its Form 10-P-10 to include a listing of the veteran's assets and liabilities. Although this step was taken to forestall Congressional action, it may well not have occurred had not the Association adopted as firm a policy as it did. The change in the form was particularly significant in view of the resistance to any change in the 10-P-10 Form by veterans' organizations through the years.

Next consider the letter written on July 7, 1953, by Mr. Dodge, then Director of the Bureau of the Budget, to the Chairman of the Hospital Sub-Committee of the Committee on Veterans Affairs of the House of Representatives. In this letter Mr. Dodge discusses the results of the VA "present policy of providing free hospitalization for veterans with non-service disabilities." He points out that "with this continuing enlargement of the veterans' population, it will be the veteran himself and his family who, through taxes, will be paying the major part of the cost of that hospital care"; that "constant expansion of this hospital program establishes a serious drain upon the physician, nursing, and other scarce hospital manpower resources of the entire country"; that "two-thirds of these hospital facilities are now devoted to the care of non-service-connected veterans and the proportion will steadily increase." These facts and others listed by Mr. Dodge but not quoted here led him to "suggest the need for reconsidering the extent of the Federal government's responsibility toward veterans with non-service illnesses." Although Mr. Dodge is no longer the director of the bureau, and this letter has not as yet influenced a change in the law, it was an important official expression from a man in the executive branch of the government who knew the facts relative to Veterans Administration expenditures.

Another sign of progress is the fact that the American Medical Association, in July, 1953, received an invitation to testify before the aforementioned Sub-Committee of the House Veterans Affairs Committee. At that time, this committee heard for the first time views other than, and contrary to, those of the Veterans Administration and the veterans organizations.

Of the editorial comment in the press coming to the attention of the committee during the past ten months, the majority of the opinions expressed were favorable to the stand taken by the House of Delegates. Even writers for popular magazines are becoming interested in the facts relative to this situation. The article in the March, 1954, *Reader's Digest*, entitled "Must We Follow the VA Route to Socialized Medicine?" was not written or "planted" by the American Medical Association; furthermore, the writer did not have contact with the Association's headquarters office prior to the publication of the article. The *Digest's* staff writer, however, might not have selected this subject had not the Association taken a firm stand on the issue. Recently, the American Tax Foundation issued a report including certain recommendations concerning veterans' benefits in general. Among these was the elimination of Federal care for veterans with non-service-connected disabilities. Again this indicates an awakening to the issues involved in this ever-growing problem.

These and many other developments lend support to the policy adopted by the House of Delegates. When it is recalled that the medical profession is dealing with a legislative trend that has developed over the thirty years, that we are opposing something to which organized veteran groups are committed, that these veteran groups have for years exerted tremendous pressure on Congress, and that our program thus far has been one of informing the medical profession concerning this situation, the developments to date become even more important and encouraging.

In conclusion, the Council on Medical Service recommends that the House of Delegates reaffirm the policy on veterans medical care adopted at the June, 1953, session of the House.

With reference to policy implementation, the Committee on Federal Medical Services will continue with its program of information to the medical profession, (*a*) through a regular news letter to state medical society officers and committees concerned with this subject; (*b*) by assisting state and county society veterans' medical care committees in carrying this program to the profession and to the public wherever possible and in such manner as proves feasible; and (*c*) by the development of an able and informed group of speakers representing various areas of the nation.

With reference to legislative proposals extending the VA medical care program, the Council has requested the Committee on Federal Medical Services to explore and develop data relative to the probable needs of the Veterans Administration and the veteran population for medical and hospital care as projected over a ten-year period. This exploration is to be based on the policy of the American Medical Association with respect to veterans' medical care as established by the House of Delegates in June, 1953. In accomplishing this exploration, the committee would be authorized to develop liaison with the Association of American Medical Colleges, the American Hospital Association, the American College of Surgeons, the American College of Physicians, the American Academy of General Practice, and such other organizations as the committee deems advisable.

The Council is requesting its Committee on Indigent Care to see if it is possible to obtain state by state estimates of the number of beds necessary to accommodate the transfer of veterans with non-service-connected disabilities to local hospital facilities.

Finally, the Council has requested its committee to undertake a review of the history and obtain facts and data relative to the entire problem of service connection by presumption, particularly as it is being carried out through the legislative proposals of the House Committee on Veterans Affairs.

Federal Medical Services

In June, 1953, the House of Delegates referred to the Council on Medical Service a resolution, introduced by Dr. Charles G. Hayden, Massachusetts, urging a review of the first Hoover Commission recommendation concerning the establishment of a federal department of health. This resolution is being considered by the Committee on Federal Medical Services along with its general review of federal medical programs. However, since a second so-called Hoover Commission (Commission on the Organization of the Executive Branch of the Government) has been created by President Eisenhower and is at present re-studying this entire problem, the committee believes it is best to postpone any recommendations that it might make to the House of Delegates until this second Hoover Commission has completed its work and has made its report. The committee has liaison with the Hoover Commission and has already presented some of the American Medical Association's views relative to federal medical services.

REPORT OF REFERENCE COMMITTEE ON INSURANCE AND MEDICAL SERVICE

Dr. Thomas J. Danaher, Chairman, presented the following report, which was adopted:

Report of the Council on Medical Service on Voluntary Health Insurance.—In this report the Council on Medical Service states the difficulty encountered in conducting the Seal of Acceptance program and recommends discontinuance of the Seal of Acceptance for voluntary health insurance plans. It further states that the standards and principles will be maintained as guides and recommendations for all groups operating or establishing plans. Your reference committee considered this report and is of the opinion that it should be approved by the House of Delegates.

Progress Report on Veterans' Medical Care by the Council on Medical Service.—This is a detailed report on the activities of the Committee on Federal Medical Services during the past year. The committee has carried out the implementation of the policy statement of the House of Delegates by employing all of the facilities of the American Medical Association and all of the facilities of the state and county medical societies, and has disseminated background information and accurate statistical data to the profession and the public on the nature of the problem, the position of the American Medical Association, and the reasons for that position in regard to medical care and hospitalization benefits for veterans in Veterans Administration and other federal hospitals. There have been regional conferences, talks at medical society meetings, and articles in various journals. The Council on Medical Service in its report recommends that the House of Delegates reaffirm the policy adopted by the House in June, 1953.

Your reference committee commends the Committee on Federal Medical Services for its excellent report and recommends approval of this report by the House of Delegates.

Report of the Council on Medical Service on Federal Medical Services.—In this report the Council brings out the fact that in June, 1953, the House of Delegates referred to the Council on Medical Service a resolution on the first Hoover Commission's recommendations concerning the establishment of a federal department of health. However, since the second Hoover Commission has been created and is re-studying the entire problem, the committee believes it best to postpone any recommendations to the House of Delegates until the second Hoover Commission has completed its work. Your reference committee recommends that this report of the Council on Medical Service be approved by the House of Delegates.

Presentation of Mrs. Frank M. Gastineau

Dr. John W. Green, California, after receiving the consent of the House, presented Mrs. Frank M. Gastineau of Indianapolis, as follows:

Mr. Speaker and Members of the House: Having been very greatly interested for three years in the American Medical Education Foundation and chairman of that group in the State of California, and having had such great help from the Woman's Auxiliary in California, I felt it would be no more than right for us to recognize in our House today the work of the American Medical Education Foundation Chairman for the Auxiliary for the entire country, Mrs. Frank M. Gastineau of Indianapolis. I told her that it required unanimous consent of the House for her to speak and that she would not get that, so she will not speak.

(To be continued)

MEDICAL NEWS

CALIFORNIA

Postgraduate Courses.—The School of Medicine and Medical Extension of the University of California at Los Angeles, in cooperation with the San Diego County Medical Society, announces the following symposiums, open to graduates of medical schools approved by the A. M. A. Council on Medical Education and Hospitals: Highlights of Clinical Endocrinology (July 28), Use of Physical Medicine in General Practice (Aug. 4), and Problems in Anesthesia (Aug. 11). All sessions will meet in the fourth floor conference room of the Surgical Building, San Diego County General Hospital, north end of Front St. Applications or requests for information concerning fees and hours of these courses should be made to Dr. Thomas H. Sternberg, Medical Extension, University of California, Los Angeles 24.

CONNECTICUT

TV Health Programs.—On Mondays from 6:00 to 6:15 p. m., station WNHC-TV, New Haven (channel 8) is presenting a series of weekly programs entitled "Stay Well" in cooperation with the Connecticut TV Committee for Health Education, which is made up of 21 representatives of 13 statewide official and private health agencies and Connecticut's four television stations. The first three programs of the current series, which began July 12, were "You and Cancer," "A Trip Through Your Heart," and "Will Power and Arthritis." Other programs in the initial series will be concerned with accident prevention and medical and hospital care.

FLORIDA

State Medical Election.—Newly elected officers of the Florida Medical Association include Dr. Duncan T. McEwan, Orlando, president; Dr. John D. Milton, Miami, president-elect; Dr. V. Marklin Johnson, West Palm Beach, Dr. Frederick H. Bowen, Jacksonville, and Dr. Rowland E. Wood, St. Petersburg, 1st, 2nd, and 3rd vice-presidents, respectively; Dr. Samuel M. Day, Jacksonville, secretary-treasurer; and Dr. Shaler A. Richardson, Jacksonville, editor.

Bascom H. Palmer Cited.—At the 80th assembly of the house of delegates of the Florida Medical Association, Mr. Claud Andrews, director of rehabilitation services of the state of Florida, presented to Dr. Bascom H. Palmer a citation authorized by President Eisenhower. Dr. Palmer has been closely associated with the Miami Lighthouse for the Blind for many years. He was its medical director in 1932, and in 1939 he donated the property on which it stands.

IOWA

Institute of Nursing Home Management.—Drake University's community college will present the second annual Institute of Nursing Home Management in cooperation with the Iowa Nursing Home Association, Inc., on the campus in Des Moines, July 26 to 30. Thursday at 2:30 p. m. Dr. William D. Paul, Iowa City, will serve as chairman for a symposium, "Medical Aspects of Chronic Illnesses." Dr. Walter L. Bierring, Des Moines, will be guest of honor at the banquet Thursday, 6 p. m. Other physicians participating in the institute include Drs. William M. Sproul, Des Moines ("Intake and Screening Technique"), Charles C. Graves, Des Moines ("Group Therapy Programs with Senile Patients"), Richard T. Day, Hampton ("Why Should We Have Homes for the Aging?"), and Edmund G. Zimmerer, Des Moines ("What Are and Will be the Problems of Our Aging Population in the Mid-West?").

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

KENTUCKY

Medical School for Lexington.—The University of Kentucky's board of trustees on June 1 formally sanctioned the establishment of an approved medical school in Lexington, to cost about 25 million dollars. The university will request funds for the project from the Kentucky General Assembly. In March, the Kentucky Medical Sciences Development Foundation was formed to promote interest in the project and to receive funds from private sources. Immediate objectives of the foundation are to file articles of incorporation and formulate building plans tentatively for July, 1955.

Personal.—Dr. John J. Rolf, who has practiced in Covington for 24 years, was the recipient of the E. M. Howard award as the outstanding member of the Kentucky Academy of General Practice at the third scientific assembly, Netherland Plaza Hotel, Cincinnati, April 21 to 22.——The position of governor for Kentucky of the American College of Physicians was recently filled by Dr. Samuel A. Overstreet, Louisville, after the vacancy was created on the board of governors by the election of Dr. J. Murray Kinsman, Louisville, to the board of regents of the college.

MAINE

Course on Industrial Audiology.—For the second consecutive year Colby College in Waterville will present, Aug. 8 to 14, its course, "Audiology for Industry," designed to enable industrial physicians and plant engineers to determine noise levels that might result in acoustic trauma and to set up programs to protect the ears of workers in heavy industry. Registrants will live on the college's new Mayflower Hill campus. The tuition fee, $200, includes board and room. Applications should be made to Ralph S. Williams, Director, Adult Education, Colby College, Waterville.

MINNESOTA

Dr. O'Leary Honored.—Dr. Paul A. O'Leary, professor of dermatology and syphilology, Mayo Foundation for Medical Education and Research, Rochester, has been honored by the *Journal of Investigative Dermatology*, which dedicated its March issue to him. He has been editor-in-chief of the *A. M. A. Archives of Dermatology and Syphilology* since 1947 and is associate editor of the *American Journal of Syphilis, GP, Hautartz, Dermatologica,* and *Excerpta Medica.* He is dermatological editor of "Current Therapy" and of "The Book of Health."

NEW YORK

Administrative Officer Needed for Cancer Research Hospital.—The New York State Department of Health is seeking an administrative officer for its cancer research hospital, Roswell Park Memorial Institute, Buffalo. The post involves full responsibility for the business administration and nontherapeutic activities of the hospital. The salary goes from $8,946 to $10,733 in five annual increases. Applications for a Sept. 25 examination to fill the position may be made by any qualified citizen of the United States to the New York State Civil Service Department, State Office Building, Albany, until Aug. 20. Arrangements will be made to hold the written test as near as possible to the applicant's location. Applicants must have had both graduate training and work experience in hospital administration and must have completed all requirements for a master's degree in hospital administration. A year's experience as administrator of a hospital of at least 50 beds or assistant administrator of a hospital of more than 100 beds and two more years of this experience or four more years of hospital administrative experience or two years of hospital and two of general administrative or professional experience, or a combination of these, are required. The examination will consist of a written test and

a rating of training and experience. Information is available from the Civil Service Department, State Office Building, Albany.

New York City

Dr. Andresen Honored.—Dr. Albert F. R. Andresen, clinical professor emeritus of State University of New York College of Medicine at New York City, Brooklyn, was given the Julius Friedenwald medal for outstanding achievement in gastroenterology at the annual meeting of the American Gastroenterological Association at San Francisco, June 19.

Infant and Child Health.—According to the commissioner of health, city of New York, the city-wide infant mortality rate for the first 10 months of 1953 (24.2) rose slightly over the rate for the same period in 1952 (23.7), there being 3,281 infant deaths in the first 1953 period as against 3,250 for the 1952 period. The department operates 73 child health stations throughout the city. During the first 10 months of 1953, 135,048 infant visits and 123,844 visits by preschool children were paid to these stations. The stations now serve about 25% of all newborn infants. In the first 10 months of 1953, $426,483.38 was paid for the care of 1,410 infants, an average of $302.47 per child; in addition, parents made payments totaling $10,670.12.

Society News.—Dr. Harold Brandaleone, assistant clinical professor of medicine for rehabilitation in New York University College of Medicine, has been elected president of the Medical Alumni Association, New York University-Bellevue Medical Center's college of medicine. Dr. Sidney Rubenfeld, professor of clinical radiology at NYU College of Medicine, has been chosen president-elect; Dr. Wallace B. Murphy, assistant professor of clinical surgery in NYU College of Medicine, vice-president; Dr. Alan A. Scheer, clinical instructor in otorhinolaryngology in NYU Post-Graduate Medical School, treasurer; and Dr. Claude E. Heaton, associate professor in obstetrics and gynecology in NYU College of Medicine, historian.

RHODE ISLAND

Personal.—Dr. Henry F. McCusker, Providence, was recently appointed assistant director of the Rhode Island Hospital and director of the department of postgraduate medical education, thereby becoming also chief of a medical department. Dr. McCusker will take over his new duties as of Sept. 1, at which time he plans to retire from private practice.

Fiske Fund Contest.—The trustees of the Fiske Fund of the Rhode Island Medical Society will award $250 for the best dissertation worthy of a premium on the subject "Modern Developments in Anesthesia." The dissertation will be particularly graded on the basis of original work by the author and his observation of patients. Entries should be sent to John E. Farrell, Sc.D., 106 Francis St., Providence 3, on or before Feb. 1, 1955, with a motto inscribed, and should be accompanied by a sealed envelope bearing the same motto inscribed on the outside and the sender's name and address within. Manuscripts must be typewritten, double-spaced, on standard typewriter paper and should not exceed 10,000 words.

TENNESSEE

Dr. Schreier Named Chief of Division.—Dr. Phillip C. Schreier, appointed acting chief of the division of obstetrics and gynecology at the University of Tennessee College of Medicine and the John Gaston Hospital, Memphis, Oct. 1, 1953, has been named professor and chief of the division. He has been a member of the university staff since 1924.

Camp for Diabetic Children.—The Tennessee Diabetes Association is sponsoring for the third year the Tennessee Camp for Diabetic Children, which will be open Aug. 2 to 15 to diabetic boys and girls between the ages of 7 and 16. The camp will be held at Camp Glancy, Sequatchie, about 40 miles from Chattanooga. Two nurses are at camp constantly, and the executive director, Dr. Albert S. Easley of Chattanooga, visits the camp daily. Diets correspond to the campers' diets as submitted by their physicians. The cost of the camp, $80 for two weeks, includes insulin and arts and crafts materials. No child is denied the privilege of attending the camp because of inability to pay. Initial plans have been made and steps taken to purchase, build, and equip a permanent Tennessee camp for diabetic children, which will probably be ready for the 1955 season.

PUERTO RICO

School of Medicine Holds First Commencement.—The annual commencement exercises of the University of Puerto Rico, June 1, were highlighted by the conferring of the degree of doctor of medicine in the first class graduating from its school of medicine, 45 Puerto Rican trained physicians receiving the degree. Half of the graduates were selected under the national intern matching program for internship in hospitals in the continental United States, and the remainder will intern in Puerto Rico. About two-thirds of the 183 students in the four medical classes have governmental scholarships that oblige the recipient to spend a year for each year of scholarship in a government hospital or health center of the commonwealth or practice in a small community selected by the Department of Health of the Insular Government.

At the commencement exercises the degree of doctor of laws, *honoris causae*, was conferred on Dr. Harold W. Brown, director of the School of Public Health of Columbia University, New York, who served as special advisor in charge of medical affairs to the chancellor of the University of Puerto Rico during the early development of the school of medicine and was acting dean during part of 1952; Dr. Cyrus C. Sturgis, professor and head of the department of internal medicine and director of the Thomas Henry Simpson Institute for Medical Research at the University of Michigan Medical School, Ann Arbor, and president of the American College of Physicians; and Ralph J. Bunche, Ph.D., New York, director of the trusteeship division of the United Nations, a recent winner of the Nobel prize for peace. The University of Puerto Rico School of Medicine, San Juan, was recently admitted to full affiliate membership in the Association of American Medical Colleges and given full approval as an accredited four year medical school by the A. M. A. Council on Medical Education and Hospitals.

GENERAL

Radiological Conference.—The Rocky Mountain Radiological Society will hold its midsummer radiological conference at the Shirley-Savoy Hotel, Denver, Aug. 19 to 21. The following physicians will be guest speakers: Traian Leucutia, Detroit; Eugene P. Pendergrass, Philadelphia; Leo G. Rigler, Minneapolis; and Charles E. Sherwood II, Rochester, N. Y.

Funds Needed to Combat Antivivisectionists.—Calling attention to the fact that "antivivisectionists are preparing for all-out attempts to restrict animal experimentation in several key areas," Anton J. Carlson, Ph.D., president, National Society for Medical Research, appeals for funds to put into effect the society's plans to meet this challenge. Contributions may be sent to the society's headquarters, 208 N. Wells St., Chicago 6.

Emergency March of Dimes Drive.—The National Foundation for Infantile Paralysis will stage an emergency March of Dimes campaign Aug. 16 to 31, to raise 20 million dollars to reach the goal of 75 million dollars set for the 1954 campaign. This total is made up of $26,500,000 needed for the prevention of poliomyelitis, $28,700,000 for patient care, and $19,800,000 for all other national foundation activities, including research, professional education, administration, medical and community services, and other operational expenditures.

Project on Multiple Sclerosis in Twins.—The National Multiple Sclerosis Society is conducting a nationwide search for identical twins, male or female, one or both of whom suffer from multiple sclerosis. To aid research into the possible hereditary and environmental causes of the disease, identical twins, primarily, are being sought, but Dr. Harold R. Wainerdi, medical director of the society, states that information will be welcomed on all cases of twins afflicted with multiple sclerosis, as well as cases in which the disease has attacked more than one person in a family. Persons responding to the society's appeal

are asked to contact the National Multiple Sclerosis Society, 270 Park Ave., New York 17.

Isaac Ray Award.—The American Psychiatric Association recently bestowed on the Hon. John Biggs Jr., chief judge of the U. S. Court of Appeals (Third Circuit), Wilmington, Del., the $1,000 Isaac Ray award for 1954 for his contributions to the field of legal problems connected with mental disorders. Judge Biggs will deliver a series of six lectures on legal aspects of psychiatry in November and December at the University of California medical and law schools. The lectures will then be published in book form by Harcourt, Brace and Company. The Isaac Ray award is given annually to a lawyer or psychiatrist in the interest of furthering understanding between the two professions, and the winner of the award is asked to deliver from three to six lectures at a university that incorporates both medical and law schools.

Course in Medical Writing.—A new workshop course, "Writing for the Medical and Scientific Journals," will be offered from Sept. 30 to Jan. 27, 1955, by the Washington Square Writing Center at New York University's division of general education, New York. Of special interest to physicians, dentists, scientists, and persons interested in techniques of technical writing, the new workshop will meet from 8:10 to 9:55 p. m. on Thursdays, with Mr. Milton L. Zisowitz as instructor. The course will cover bibliographical research, outlining, writing and rewriting, illustrations and tables, indexing, and final preparation of technical manuscripts for publication. Students may enroll from Sept. 13 to Oct. 1 at the offices of NYU's Division of General Education, 1 Washington Sq. N., New York 3.

International Vitamin Commission Appointed.—To provide standardization in the vitamin assay of foods in various countries and thus facilitate international trade, a vitamin commission has been organized under the auspices of the Food Division of the International Union of Pure and Applied Chemistry with Prof. E. Brunius, of the National Public Health Institute, Stockholm, Sweden, as chairman. Bernard L. Oser, Ph.D., of the Food Research Laboratories, Inc., Long Island City, N. Y., is a member of the five man commission. The group will explore vitamin procedures specifically adapted to food products entering into international commerce. Medicinal vitamin preparations, such as are presently included in the national and international pharmacopoeias, will not be included. The commission will attempt to use the standardized methods of the numerous organizations within several countries that have engaged in standardization work and to integrate and adapt these methods for use at the international level.

Library Materials Shipped in "Laundry Kits."—The Memorial Library of the Texas Medical Association reports that small "laundry kits" have proved extremely satisfactory as containers for the two way shipment of medical journals and other library reference materials. Paper cartons, previously used, were frequently discarded on receipt, and the materials, returned in makeshift wrappings, were often damaged in transit. The Memorial Library has 150 kits in constant use. Four sizes (12 by 9 by 2½ in., 12 by 9 by 1½ in., 12 by 9 by 4 in., and 11 by 8 by 4 in.) have been adequate for almost all mailings. Each box has two web straps with safety catches. According to Miss Pauline Duffield, librarian of the Texas Medical Association, "In the seven months in which we have used the kits, we have found them to be economical, with less wear and tear on the materials, and a real help in improving the disposition of the library staff and the physicians. Our materials now are coming back in better condition and we have very few overdue notices to send out. Most importantly, doctors are finding it more convenient to use the facilities of the library."

Student Fellowships.—The Lederle Laboratories Division of the American Cyanamid Company is making available to medical schools throughout the United States and Canada "Lederle Medical Student Research Fellowships." These fellowships, in amounts not exceeding $600 per year for any one person, are intended to relieve in part the financial burden of students who desire to devote their summer vacations to research in the basic (preclinical) medical sciences. Students who apply for Lederle Medical Student Research Fellowships must be of good scholastic standing and must have the consent of the faculty member under whose supervision their research is to be conducted. The selection of students to receive such awards will be made by the dean of the medical school or by the regularly constituted committee of the faculty charged with such selections. By special permission of the dean or the fellowship committee of the school, the student may carry on such research in another medical school, provided that satisfactory arrangements are previously made with the faculty member of the chosen school and the department involved. Information may be obtained from Dr. Benjamin W. Carey, Director of Laboratories, Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y.

Clinical Pathologists to Meet in Washington.—The International Congress of Clinical Pathology will be held in Washington, D. C., Sept. 6 to 11, under the sponsorship of the International Society of Clinical Pathology and on the invitation of the American Society of Clinical Pathologists. The joint opening session will be Monday morning. At 2 p. m. Dr. Emma S. Moss, New Orleans, will serve as moderator for a symposium of the College of American Pathologists on diseases caused by fungi. Tuesday morning a joint scientific session on the geographical distribution of cancer will be opened by "General Incidence of Cancer Throughout the World" by Harold F. Dorn, Ph.D., Bethesda, Md. Dr. Paul E. Steiner, Chicago, will contribute a paper entitled "Etiologic Significance of Racial Studies in Cancer." A joint scientific session on geographical distribution of diseases other than cancer will be held Friday afternoon, at which time the Askanazy lecture of the International Society of Geographic Pathology will be delivered. Saturday morning will be devoted to the annual seminar of the American Society of Clinical Pathologists. Presidents of the participating groups are Dr. John R. Schenken, Omaha, American Society of Clinical Pathologists; Dr. R. Kourilsky, Paris, France, International Association of Clinical Pathology; Dr. Harold Stewart, Bethesda, Md., International Association of Medical Museums; and Dr. Robert A. Moore, Pittsburgh, International Society of Geographic Pathology.

Tobacco Industry Research Committee.—The Tobacco Industry Research Committee announces the appointment of Dr. Clarence Cook Little, former president of the American Association for Cancer Research, as director of its newly organized scientific research program (THE JOURNAL, June 19, page 760). Dr. Little, who has served as a member of the National Advisory Cancer Council, has been president of the University of Maine (1922-1925) and the University of Michigan (1925-1929). Now director of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, he will continue in that position, dividing his time between the Bar Harbor laboratory and the work of the tobacco industry research program. In discussing his new appointment, Dr. Little said: "We shall not attempt to direct the course of this research, nor shall we limit or influence the investigator in charge of it. We shall try to preserve for him the highest possible degree of freedom of ideas and of execution. . . . The members of the Scientific Advisory Board of the Tobacco Industry Research Committee consider the investigation of tobacco in relation to health as a noncontroversial field. The sole interest of the scientists serving on this board is to discover facts and to utilize these facts constructively and for the purpose of increasing human welfare. The Tobacco Industry Research Committee has given unqualified assurance to both the Scientific Advisory Board and the Scientific Director that they will have complete scientific freedom in all phases of their work."

Society News.—At the recent meeting of the **American Orthopaedic Association** the following officers were elected: Dr. J. Warren White, Honolulu, Hawaii, president; Dr. Gilbert E. Haggart, Boston, vice-president; Dr. Paul C. Colonna, Philadelphia, president-elect; Dr. H. Page Mauck, Richmond, Va., treasurer; and Dr. George O. Eaton, Baltimore, secretary.—— At the annual meeting of the **American Diabetes Association** the following officers were elected: Dr. Henry B. Mulholland, Charlottesville, Va., president; Dr. Henry T. Ricketts, Chicago, first vice-president; Dr. Frederick W. Williams, New York, second vice-president; Dr. John A. Reed, Washington, D. C.,

secretary; and Dr. William H. Olmsted, St. Louis, treasurer.——At a special meeting of the executive board of the **American Academy of Pediatrics** in Chicago on June 5, Dr. Charles D. May, professor of pediatrics at the University of Iowa College of Medicine, Iowa City, was appointed editor in chief of *Pediatrics,* effective July 1. Dr. May, a member of the editorial board of *Pediatrics,* will succeed Dr. Hugh McCulloch, Chicago, who has resigned from the position of editor after 23 years of service as an associate editor and editor in chief.——At the annual meeting of the **Society of Biological Psychiatry** the following officers were elected: Dr. Harold E. Himwich, Galesburg, Ill., president; Dr. Howard D. Fabing, Cincinnati, first vice-president; Dr. Margaret A. Kennard, Vancouver, B. C., second vice-president; and Dr. George N. Thompson, Los Angeles, secretary-treasurer. The next meeting will be held at the Palmer House, Chicago, June 12, 1955.——At the regular meeting of the **South Atlantic Association of Obstetricians and Gynecologists** in January, the following officers were elected: Dr. Robert G. Nelson, Tampa, Fla., president; Dr. Waverly R. Payne, Newport News, Va., president-elect; Dr. John C. Burwell, Greensboro, N. C., vice-president; and Dr. Charles H. Mauzy, Winston-Salem, N. C., secretary. The next annual meeting of the association will be held in Williamsburg, Va., Feb. 10 to 12, 1955.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States and its territories and possessions in the weeks ended as indicated:

Area	June 26, 1954: Paralytic Type	June 26, 1954: Total Cases Reported	June 27, 1953, Total
New England States			
Maine	..	..	1
New Hampshire	..	..	3
Vermont	..	1	..
Massachusetts	1	5	3
Rhode Island	..	1	2
Connecticut	2	8	6
Middle Atlantic States			
New York	6	11	28
New Jersey	2	4	6
Pennsylvania	..	6	12
East North Central States			
Ohio	2	6	21
Indiana	3	8	7
Illinois	2	9	18
Michigan	9	23	11
Wisconsin	1	6	4
West North Central States			
Minnesota	..	4	13
Iowa	1	5	1
Missouri	..	3	17
North Dakota	..	1	..
South Dakota	1	2	3
Nebraska	6	10	1
Kansas	2	5	10
South Atlantic States			
Delaware	..	..	..
Maryland	..	..	1
District of Columbia	1	1	2
Virginia	1	1	5
West Virginia	1	2	8
North Carolina	2	8	32
South Carolina	2	9	2
Georgia	4	14	17
Florida	17	51	9
East South Central States			
Kentucky	3	4	12
Tennessee	1	6	19
Alabama	..	11	37
Mississippi	9	32	27
West South Central States			
Arkansas	7	10	10
Louisiana	11	28	29
Oklahoma	7	14	20
Texas	46	99	63
Mountain States			
Montana	..	1	..
Idaho	..	1	1
Wyoming	..	2	1
Colorado	3	6	2
New Mexico	..	..	4
Arizona	3	5	3
Utah	..	2	..
Nevada	..	2	..
Pacific States			
Washington	3	5	1
Oregon	5	7	1
California	30	60	59
Territories and Possessions			
Alaska	1	2	3
Hawaii	6	11	1
Puerto Rico	..	..	..
Total	201	512	536

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.
1954 Clinical Meeting, Miami, Florida, Nov. 29-Dec. 2.
1955 Annual Meeting, Atlantic City, N. J., June 6-10.
1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.
1956 Annual Meeting, Chicago, June 11-15.

AMERICAN MEDICAL ASSOCIATION PUBLIC RELATIONS INSTITUTE, Drake Hotel, Chicago, Sept. 1-2. Mr. Leo E. Brown, 535 N. Dearborn St., Chicago 10, Director.

ALASKA TERRITORIAL MEDICAL ASSOCIATION, Mt. McKinley Park Hotel, Mt. McKinley Park, Aug. 15-17. Dr. William P. Blanton, P.O. Box 2569, Juneau, Secretary.

AMERICAN ASSOCIATION OF BLOOD BANKS, The Shoreham, Washington, D. C., Sept. 13-16. Miss Marjorie Saunders, 3500 Gaston Ave., Dallas 4, Texas, Secretary.

AMERICAN ASSOCIATION OF OBSTETRICIANS, GYNECOLOGISTS AND ABDOMINAL SURGEONS, The Homestead, Hot Springs, Va., Sept. 1-11. Dr. Frank R. Lock, Bowman Gray School of Medicine, Winston-Salem, N. C., Secretary.

AMERICAN CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION, Hotel Statler, Washington, D. C., Sept. 6-11. Dr. Walter J. Zeiter, 30 N. Michigan Ave., Chicago 2, Executive Director.

AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS, Shoreham Hotel, Washington, D. C., Sept. 6. Dr. Clyde G. Culbertson, 1040-1232 W. Michigan St., Indianapolis, Secretary.

AMERICAN VETERINARY MEDICAL ASSOCIATION, Olympic Hotel, Seattle, Aug. 23-26. Dr. J. G. Hardenbergh, 600 South Michigan Blvd., Chicago 5, Executive Secretary.

COLLEGE OF AMERICAN PATHOLOGISTS, The Shoreham, Washington, D. C., Sept. 12. Dr. Arthur H. Dearing, 203 N. Wabash Ave., Chicago 1, Executive Secretary.

MONTANA MEDICAL ASSOCIATION, Hotel Finlen, Butte, Sept. 16-19. Mr. L. R. Hegland, 1236 N. 28th St., Billings, Executive Secretary.

NATIONAL MEDICAL ASSOCIATION, Washington, D. C., Aug. 9-13. Dr. John T. Givens, 1108 Church St., Norfolk 10, Va., Executive Secretary.

PACIFIC DERMATOLOGIC ASSOCIATION, Broadmoor Hotel, Colorado Springs, Colo., Sept. 2-4. Dr. Ben A. Newman, 436 N. Roxbury Drive, Beverly Hills, Calif., Secretary.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:
Bismarck, N. D., Sept. 11. Dr. Robert B. Radl, 221 Fifth St., Bismarck, N. D., Governor.

RENO SURGICAL SOCIETY, Reno, Nev., Aug. 19-21. Dr. James R. Herz, 508 Humboldt St., Reno, Nev., Secretary.

U. S. CHAPTER, INTERNATIONAL COLLEGE OF SURGEONS, Chicago, Sept. 7-10. Dr. Karl Meyer, 1516 Lake Shore Dr., Chicago, Secretary.

WASHINGTON STATE MEDICAL ASSOCIATION, Davenport Hotel, Spokane, Sept. 18-22. Dr. Bruce Zimmerman, 1309 Seventh Ave., Seattle 1, Secretary.

WEST VIRGINIA STATE MEDICAL ASSOCIATION, The Greenbrier, White Sulphur Springs, Aug. 19-21. Mr. Charles Lively, P.O. Box 1031, Charleston, Executive Secretary.

FOREIGN AND INTERNATIONAL

COMMONWEALTH HEALTH AND TUBERCULOSIS CONFERENCE, Royal Festival Hall, London, England, June 21-25, 1955. Mr. J. H. Harley Williams, Tavistock House North, Tavistock Square, London, W.C.1, England, Secretary General.

CONFERENCE OF INTERNATIONAL UNION AGAINST TUBERCULOSIS, Madrid, Spain, Sept. 26-Oct. 2, 1954. Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid, Spain.

CONGRESS OF INTERNATIONAL ASSOCIATION FOR THE PREVENTION OF BLINDNESS, New York, N. Y., U. S. A., Sept. 12-17, 1954. Professor Franceschetti, 2 Avenue Mirmot, Geneva, Switzerland, Secretary-General.

CONGRESS OF THE INTERNATIONAL DIABETES FEDERATION, Cambridge, England, July 4-8, 1955. Mr. James G. L. Jackson, 152 Harley St., London, W.1, England, Executive Secretary General.

CONGRESS OF INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY, Vichy and Paris, France, Sept. 26, 1954. For information write: Dr. Giulio Ammirandoli, Via Della Torretta 11, Montecatini Terme, Italy.

INTER-AMERICAN CONGRESS OF RADIOLOGY, Shoreham Hotel, Washington, D. C., U. S. A., April 24-29, 1955. Dr. Eugene P. Pendergrass, 3400 Spruce St., Philadelphia 4, Pa., U. S. A., Secretary General.

INTER-AMERICAN SESSION, AMERICAN COLLEGE OF SURGEONS, Universidad Mayor de San Marcos de Lima, Lima, Peru, S. A., Jan. 11-14, 1955. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Ambassador Hotel, Los Angeles, Calif., U. S. A., Oct. 10-14, 1954. For information write: Dr. T. H. Seldon, 102-110 Second Avenue S.W., Rochester, Minn., U. S. A.

INTERNATIONAL CONGRESS OF CLINICAL PATHOLOGY, Washington, D. C., U. S. A., Sept. 6-10, 1954. Dr. Robert A. Moore, University of Pittsburgh, Schools of the Health Profession, Pittsburgh 13, Pa., U. S. A., Chairman, Committee on Arrangements.

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST, Barcelona, Spain, Oct. 4-8, 1954. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Ill., U. S. A., Executive Secretary.

INTERNATIONAL CONGRESS ON GROUP PSYCHOTHERAPY, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., Director of Organizing Committee.

INTERNATIONAL CONGRESS ON GYNECOLOGY AND OBSTETRICS, Geneva, Switzerland, July 26-31, 1954. Dr. H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

INTERNATIONAL CONGRESS OF HEMATOLOGY, Paris, Sept. 6-11, 1954. Dr. Jean Bernard, 86 rue d'Assas, Paris 6°, France, Secretary.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE, Rome and Salerno, Italy, Sept. 13-20, 1954. For information write: Segreteria XIV Congresso Internazionale di Storia della Medicina, Instituto di Storia della Medicine, Citta Universitaria, Rome, Italy.

INTERNATIONAL CONGRESS OF HYDATID DISEASE, Madrid, Spain, Sept. 25-30, 1954. Dr. Jesus Calvo Melendro, Hospital Provincial, Sorea, Spain, Secretary General.

INTERNATIONAL CONGRESS FOR INDIVIDUAL PSYCHOLOGY, Zurich Switzerland, July 26-29, 1954. For information write: Dr. E. Schmid, 14, Kronleinstrasse, Zurich, Switzerland.

INTERNATIONAL CONGRESS OF INDUSTRIAL MEDICINE, Naples, Italy, Sept. 13-19, 1954. Professor Scipione Caccuri, Director, Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Stockholm, Sweden, Sept. 15-18, 1954. Professor Anders Kristenson, Karolinska Sjukhuset, Stockholm 60, Sweden, Secretary-General.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

INTERNATIONAL CONGRESS OF NUTRITION, Amsterdam, Netherlands, Sept. 13-17, 1954. Dr. M. van Eekelen, Centraal Instituut voor Voedingsonderzoek T.N.O., 61 Catharynesingel, Utrecht, Netherlands, General Secretary.

INTERNATIONAL CONGRESS OF OPHTHALMOLOGY, University of Montreal and McGill University, Montreal, Canada, Sept. 9-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 12-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minn., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF ORTHOPEDIC SURGERY AND TRAUMATOLOGY, Berne, Switzerland, Aug. 30-Sept. 3, 1954. For information write: Professor M. Dubois, Isle-Hospital, Berne, Switzerland.

INTERNATIONAL FEDERATION OF MEDICAL STUDENT ASSOCIATIONS, Rome, Italy, Oct. 1-5, 1954. Mr. Jorgen Falck Larsen, 12, Kristianiagade, Copenhagen Ø, Denmark, General Secretary.

INTERNATIONAL HOSPITAL CONGRESS, Lucerne, Switzerland, May 30-June 3, 1955. Capt. J. E. Stone, International Hospital Federation, 10 Old Jewry, London, E.C.2, England, Hon. Secretary.

INTERNATIONAL INSTITUTE ON CHILD PSYCHIATRY, Toronto, Canada, Aug. 13-14, 1954. Miss Helen Speyer, International Association for Child Psychiatry, 1790 Broadway, New York 19, N. Y., U. S. A., Executive Officer.

INTERNATIONAL POLIOMYELITIS CONGRESS, University of Rome, Orthopedic Clinic, Rome, Italy, Sept. 6-10, 1954. Mr. Stanley E. Henwood, 120 Broadway, New York 5, N. Y., U. S. A., Executive Secretary.

INTERNATIONAL SOCIETY OF BLOOD TRANSFUSION, Paris, France, Sept. 12-19, 1954. For information write: Colonel Julliard, Société Internationale de Transfusion Sanguine, 53 Boulevard Diderot, Paris 12°, France.

INTERNATIONAL SOCIETY FOR CELL BIOLOGY, Leiden, Netherlands, Sept. 1-8, 1954. Professor Peter J. Gaillard, University of Leiden, Leiden, Netherlands, Secretary.

INTERNATIONAL SOCIETY OF GEOGRAPHICAL PATHOLOGY, Washington, D. C., U. S. A., Sept. 6-10, 1954. Professor Fred C. Roulet, Hebelstrasse 24, Basel, Switzerland, Secretary-General.

JAPAN MEDICAL CONGRESS, Kyoto University and Kyoto Prefectural Medical College, Kyoto, Japan, April 1-5, 1955. Dr. Mitsuharu Goto, University Hospital, Medical Faculty of Kyoto University, Kyoto, Japan, Secretary General.

LATIN AMERICAN CONGRESS OF ANESTHESIOLOGY, Sao Paulo, Brazil, S. A., Sept. 12-18, 1954. Dr. Zairo E. G. Vieira, Praca Floriano, 55-7°, And., Rio De Janeiro, Brazil, S. A., Secretario.

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, Lima, Peru, S. A., Feb. 14-19, 1955. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, N. Y., U. S. A., Executive Director.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION CONGRESS, Lake Garda, Italy, Sept. 15-21, 1954. Dr. Ada Chree Reid, 118 Riverside Drive, New York 24, N. Y., U. S. A., President.

PAN AMERICAN CONGRESS OF PEDIATRICS, Sao Paulo, Brazil, Aug. 1-7, 1954. For information address: Dr. Jairo Ramos, Avenida Brigaderio Luiz Antonio 278-8° andar, Sao Paulo, Brazil.

PAN AMERICAN HOMEOPATHIC MEDICAL CONGRESS, Hotel Gloria, Rio de Janeiro, Brazil, S. A., Oct. 2-13, 1954. Dr. Paul S. Schantz, 103 West Main St., Ephrata, Pa., U. S. A., Executive Secretary.

PAN-PACIFIC SURGICAL CONGRESS, Honolulu, Hawaii, Oct. 7-18, 1954. Dr. F. J. Pinkerton, Suite 7, Young Bldg., Honolulu 13, Hawaii, Director General.

WORLD CONGRESS OF CARDIOLOGY, Washington, D. C., U. S. A., Sept. 12-18, 1954. Dr. L. W. Gorham, 44 East 23d St., New York 10, N. Y., U. S. A., Secretary-General.

WORLD CONGRESS OF INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Scheveningen-The Hague, Netherlands, Sept. 13-17, 1954. Secretariat: Miss H. P. Post, Pieter Lastmarkade 37, Amsterdam Z, Netherlands.

WORLD FEDERATION OF OCCUPATIONAL THERAPISTS, Edinburgh, Scotland, August 17, 1954.

WORLD MEDICAL ASSOCIATION, Rome, Italy, Sept. 26-Oct. 2, 1954. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Held in approved medical schools where there are five or more candidates. Dates: Sept. 7-8 (Part I only). Candidates may file examinations at any time but the National Board must receive them at least six weeks before the date of the examination they wish to take. New candidates should apply by formal registration; registered candidates should notify the board by letter. Sec., Dr. John P. Hubbard, 133 S. 36th St., Philadelphia 4.

BOARDS OF MEDICAL EXAMINERS

ARIZONA:* *Examination and Reciprocity.* Phoenix, Oct. 13-15, Jan. 12-14, 1955 and April 13-15, 1955. Ex. Sec., Mr. Robert Carpenter, 401 Security Bldg., Phoenix.

CALIFORNIA: *Written.* San Diego, Aug. 23-26; Sacramento, Oct. 18-21. *Oral.* San Diego, Aug. 21; Los Angeles, Nov. 20. *Oral and Clinical Examination for Foreign Medical School Graduates.* Sec., Dr. Louis E. Jones, 1020 N Street, Sacramento.

DELAWARE: *Reciprocity.* Dover, July 22. Sec., Dr. J. S. McDaniel, 229 South State St., Dover.

ILLINOIS: *Examination and Reciprocity.* Chicago, Oct. 5-7. Supt. of Registration, Mr. Frederic B. Selcke, Capitol Bldg., Springfield.

MINNESOTA:* *Examination and Reciprocity.* Minneapolis, Oct. 19-21. Sec., Dr. E. M. Jones, 230 Lowry Medical Arts Bldg., St. Paul 2.

MONTANA: *Examination and Reciprocity.* Helena, Oct. 4. Sec., Dr. S. A. Cooney, 214 Power Block, Helena.

NEW HAMPSHIRE: *Examination and Reciprocity.* Concord, Sept. 8-9. Sec., Dr. John S. Wheeler, 107 State House, Concord.

NEW MEXICO:* *Examination and Reciprocity.* Santa Fe, Oct. 11-12. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

NORTH CAROLINA: *Reciprocity.* Blowing Rock, July 30. Sec., Dr. Joseph J. Combs, Professional Building, Raleigh.

SOUTH DAKOTA:* *Examination.* Vermillion, July 20-21. Reciprocity can be obtained at any time between meetings of board. Executive Secretary, Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TENNESSEE:* *Examination.* Memphis, Sept. 29-30. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis.

TEXAS:* *Examination and Reciprocity.* Fort Worth, Dec. 2-4. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

ALASKA:* On application. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

GUAM: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Sec., Dr. Benedict Cooper, Agana.

PUERTO RICO: *Examination.* San Juan, Sept. 7-11. Sec., Dr. Joaquin Mercado Cruz, Box 9156, Santurce.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARKANSAS: *Examination.* Little Rock, Oct. 5-6. Sec., Dr. Louis E. Gebauer, 1002 Donaghey Bldg., Little Rock.

COLORADO: *Examination.* Denver, Sept. 8-9. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

MICHIGAN: *Examination.* Detroit and Ann Arbor, Oct. 8-9. Sec., Mrs. Anne Baker, Mason Bldg., Lansing 2.

NEBRASKA: *Examination.* Omaha, Oct. 5-6. Director, Mr. Husted K. Watson, Room 1009, State Capitol Bldg., Lincoln 9.

NEVADA: *Examination.* Reno, July 6. Sec., Dr. Donald G. Cooney, Box 9005, University of Nevada, Reno.

OKLAHOMA: *Examination.* Oklahoma City, August 27-28. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, Sept. 11 and Dec. 4. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

RHODE ISLAND: *Examination.* Providence, August 31. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

TENNESSEE: *Examination.* Memphis, Sept. 20-21. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis 3.

TEXAS: *Examination.* October. Location to be determined by the number of applications from each section of the state. Sec., Brother Raphael Wilson, 407 Perry-Brooks Bldg., Austin.

WISCONSIN: *Examination.* Madison, Sept. 24. Milwaukee, Dec. 4. Sec., Mr. W. H. Barber, 621 Ransom St., Ripon.

*Basic Science Certificate required.

DEATHS

Portis, Sidney Alexander ⊕ Beverly Hills, Calif.; born in Chicago May 26, 1894; Rush Medical College, Chicago, 1919; clinical associate professor of medicine emeritus (Rush), University of Illinois College of Medicine in Chicago; specialist certified by the American Board of Internal Medicine; member of the Illinois State Medical Society, American Gastro-Enterological Association, American Psychosomatic Society, and the Radiological Society of North America; fellow of the American College of Physicians; associate chief examiner, subsidiary board, National Board of Medical Examiners; for many years practiced in Chicago, where he was senior attending physician, department of internal medicine and medical chief, psychosomatic group, Institute for Psychosomatic and Psychiatric Research and Training, Michael Reese Hospital, consulting physician of the department of internal medicine at Cook County Hospital, and member of the advisory board, Institute for Psychoanalysis; on the staff of the Cedars of Lebanon Hospital; head of the department of gastroenterology at the Beverly Hills Clinic; died in Johns Hopkins Hospital, Baltimore, May 24, aged 59, of hepatitis.

Lloyd, Milton Sills ⊕ New York City; born in Moosomin, Saskatchewan, Canada, July 9, 1893; McGill University Faculty of Medicine, Montreal, Canada, 1924; member of the American College of Chest Physicians and the American Trudeau Society; past president of the Richmond County Medical Society; vice-president and member of the board of directors of the United Medical Service; served in the Canadian Army and the British Royal Army Service Corps during World War I; bronchoscopist and attending thoracic surgeon at French Hospital; attending thoracic surgeon, bronchoscopist, and director of chest diseases at the Staten Island (N. Y.) Hospital; attending thoracic surgeon at St. Vincent's Hospital, Staten Island, N. Y.; consulting endoscopist at Sea View Hospital in Staten Island, N. Y.; pneumologist at the Richmond Memorial Hospital, Staten Island, N. Y.; consultant in thoracic diseases at the U. S. Public Health Service Hospital, Clifton, S. I., N. Y.; consultant in thoracic diseases at the Municipal Sanatorium in Otisville, N. Y.; consultant in thoracic diseases at Ulster County Sanatorium for Tuberculosis in Kingston, N. Y., and St. Francis Hospital in Port Jervis, N. Y.; author of many articles; contributing author to "Emergency Surgery"; inventor of medical instruments; died in Long Island College Hospital, Brooklyn, May 16, aged 60, of cerebral hemorrhage.

Loewenberg, Richard Detlev Lorenz ⊕ Bakersfield, Calif.; born in Hamburg, Germany, June 18, 1898; Hamburgische Universität Medizinische Fakultät, Hamburg, Germany, 1923; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association; on the faculty of the University of Southern California School of Medicine in Los Angeles; at one time practiced in Shanghai, China, where he was on the staff of the Shanghai Hospital and instructor of neuropsychiatry at Tung Nan Medical College; on the staffs of the Kern General and Mercy hospitals; died in Los Angeles April 29, aged 55, of cerebral hemorrhage.

Abramson, Clarence ⊕ Brooklyn; L.R.C.P. and L.R.C.S., Edinburgh, and L.R.F.P.S., Glasgow, 1936; at one time associated with the Veterans Administration; died in the Memorial Hospital, New York City, May 4, aged 44, of cancer.

Albaugh, Roscoe Porter ⊕ Cleveland, Ohio; Ohio State University College of Medicine, Columbus, 1914; member of the medical staff of the Republic Steel Corporation and its predecessors for 35 years; on the staffs of St. Alexis Hospital, Glenville Hospital, and St. Vincent Charity Hospital, where he died May 12, aged 65, of aortic aneurysm.

Bressler-Pettis, Charles Wesley, Kissimmee, Fla.; Harvard Medical School, Boston, 1917; served in the Royal Army Medical Corps until the United States entered World War I, when he was commissioned in the U. S. Army; died in the Osceola Hospital May 12, aged 65, of coronary thrombosis.

Brodberger, William Leopold, Cincinnati; Eclectic Medical Institute, Cincinnati, 1901; died March 4, aged 70.

Brownell, Hal Bailey, Buffalo; Bellevue Hospital Medical College, 1897; died in the Buffalo General Hospital April 18, aged 78, of general and cerebral arteriosclerosis.

Burns, Denver Scott, Bryan, Ohio; Ohio Medical University, Columbus, 1904; director of the Citizens Bank; served during World War I; died May 7, aged 74, of coronary disease.

Cullop, Samuel, Terre Haute, Ind.; University of Louisville (Ky.) Medical Department, 1885; died in St. Anthony's Hospital May 9, aged 94.

Cushman, Ruggles Allerton ⊕ Santa Ana, Calif.; Dartmouth Medical School, Hanover, N. H., 1882; retired as superintendent of the Mendocino State Hospital in Talmage, where he served as assistant superintendent of the hospital from 1904 to 1910 and superintendent since 1932; died May 12, aged 97, of arteriosclerosis.

Dusseau, Silas Victor ⊕ Erie, Mich.; Kentucky School of Medicine, Louisville, 1892; health officer of Erie Township; affiliated with Mercy Hospital in Monroe; died May 10, aged 85, of carcinoma of the lung.

Everwine, J. Merle ⊕ Leechburg, Pa.; Chicago College of Medicine and Surgery, 1913; served during World War I; director of the First National Bank; died in the Allegheny Valley Hospital, Tarentum, May 1, aged 67, of cachexia and metastatic hypernephroma.

Fonda, James William ⊕ Poplar Bluff, Mo.; John A. Creighton Medical College, Omaha, 1917; served during World War I; for many years associated with the Poplar Bluff Hospital, where he died May 14, aged 65, of coronary heart disease.

Heyman, Joseph Joel ⊕ Flushing, N. Y.; University of Vermont College of Medicine, Burlington, 1923; died May 3, aged 58, of heart disease.

Howell, Dent Herman, Washington, D. C.; Loyola University School of Medicine, Chicago, 1917; served during World War I; for many years associated with the Veterans Administration; died in Villa Grove, Ill., May 5, aged 75.

Hudson, Lawrence Boykin ⊕ Lucedale, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1935; served during World War II; died May 8, aged 45.

Hutcheson, Bellenden Seymour ⊕ Cairo, Ill.; Northwestern University Medical School, Chicago, 1906; served during World War I; died April 9, aged 70, of cancer of the pancreas.

Lerch, Adelbert Verne, Pleasantville, Ohio; Starling Medical College, Columbus, 1892; past president of the Fairfield County Medical Society and of the Fairfield County Board of Health; for many years president of the board of education; member of the staff of the Lancaster-Fairfield Hospital in Fairfield; in 1953 the Dr. A. V. Lerch Hospital was organized and named in his honor; physician and surgeon for the New York Central Railway System for 25 years; died May 10, aged 84.

Rogers, William Russell ⊕ Bristol, Tenn.; University of Maryland School of Medicine, Baltimore, 1901; member of the Medical Society of Virginia; at one time mayor of Bristol, Va., where he was a member of the city council; affiliated with Bristol Memorial Hospital; member of the board of directors of the Washington Trust and Savings Bank; died May 1, aged 78.

Ruffell, Charles Einwechter ⊕ Drexel Hill, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1901; practiced in Philadelphia, where he was a member of the city board of health, and associated with St. Mary's, Lankenau, and Episcopal hospitals; died April 17, aged 75, of cerebral hemorrhage and arteriosclerosis.

⊕ Indicates Member of the American Medical Association.

FOREIGN LETTERS

ARGENTINA

Unexpected Trends in the Art of Healing.—Some unexpected developments have taken place in this country in recent years. Official diplomas have been granted, after previous examination, to practitioners of two kinds. The members of one group claim that they can, through clairvoyance, see the body organs and diagnose the patient's sickness. They give advice as to whether operations recommended by surgeons are necessary; in most cases, they give their approval. Members of the other group predict future events and state that they can see persons not in the room. Neither group is allowed to practice medicine, and both are cautious not to interfere with the activities of competent physicians.

An American evangelist, Tommy Hicks, from Lancaster, Calif., has been speaking to groups of 10,000 to 40,000 persons assembled on football fields. He claims that faith in God can completely cure most diseases. Many people of Buenos Aires, having become conditioned to the authority of radio addresses, are readily impressed by anything broadcast over a loud speaker. The number of persons announcing the cure of cancer, hypertension, etc. without any demonstrable evidence has greatly increased.

National Organization for Physicians.—A concerted effort is being exerted to bring all the physicians of the country into a national organization. There is at present an independent Medical Confederation of the Argentine Republic with more than 10,000 members from all parts of the country. The first proposal, sponsored by some members of the National Congress, was the union of all medical societies (scientific, social, or professional) into one large confederation. The second proposal was affiliation with the General Labor Confederation, which is linked to the official political party and the present government. The third proposal was affiliation with the General Professional Confederation, completely independent from the General Labor Confederation, but also linked to the official party and the government. The Medical Confederation of the Argentine Republic has recommended that all its members maintain the independence of their societies and refuse to join the labor confederation, the professional confederation, or any other society with political tendencies.

AUSTRIA

Therapy of Leukemia.—At the meeting of the Society of Physicians in Vienna, April 23, 1954, Dr. H. Fleishhacker discussed various new drugs used in leukemia and his studies on the properties of the spinal fluid. Healthy persons showed the same response to the passage of short waves through the diencephalon or to electroshock as patients with leukemia did, except that the total leukocyte counts in the leukemic patients were much higher. Intramuscular or intraspinal administration of 10 cc. of spinal fluid from a healthy donor or a patient with leukemia into persons with normal blood usually resulted in a great increase in the spinal fluid leukocyte count in the recipients; the spinal fluid, therefore, must contain an active substance, which is present in a more effective or more concentrated form in the patients with leukemia. The satisfactory results obtained with injections of spinal fluid in patients with panmyelopathies and with electroshock in certain patients with chronic leukemia were stressed.

In the discussion, Dr. R. Klima stated that Myleran (dimethyl-1,4-butane disulfate), as well as the chemically identical Sulbafutin, have a far-reaching specific effect on chronic myeloid leukemia, occasionally producing a complete remission. These two drugs are well tolerated and are superior to any other chemotherapeutic agent for this purpose. Far-reaching remissions may sometimes be obtained with repeated small blood transfusions in patients with chronic leukemia. Temporary improvement of the leukemic blood picture was obtained with the administration of sedatives such as phenobarbital sodium (Luminal) and aminopyrine (Pyramidon).

Dr. K. Kundratitz stated that therapeutic results in acute leukemia may be more favorable in childhood. Unfortunately the most that can be expected is a remission; no patient is cured. Blood transfusions (also transfusions into the bone marrow), exchange transfusions, transfusions of leukocytes obtained from artificially produced sterile abscesses in relatives of the patient, general irradiation with minimal doses, antibiotics, various cytostatics such as aminopterin, Myleran, corticotropin (ACTH), and cortisone are used. The remissions may last several months, and some children have as many as five remissions. Even patients who are admitted in a dying state may recover temporarily. Children have been kept alive for one or two years. Of the 23 children treated by Kundratitz since 1950, 21 have died after remissions of various duration. Because of the unfavorable prognosis, any treatment holding even a modicum of promise is tried. The two children still living are getting the fresh cell treatment of Niehaus (bone marrow, spleen, and thymus), but no conclusions can be formulated.

Dr. R. Rape stated that the central regulatory effect stressed by Fleischhacker also plays an important part in the roentgen irradiation of patients with diseases of the blood, but it has not yet received sufficient recognition. Favorable permanent results may be obtained with general irradiation using weak doses according to Teschendorf's technique.

Dr. W. Birkmayer said that electroshock has definite indications in internal medicine; fixed hypertension, asthma, and diabetes mellitus show satisfactory remissions after one or two electroshock treatments. Two patients with inoperable cancers who were given electroshock treatmert once a week had disappearance of edema of the lower extremities and of ascites and improvement of their general condition. The remissions lasted several months.

Centenary of Birth of Lorenz.—At the meeting of the Society of Physicians in Vienna, Dr. A. Saxl reported on the history and work of the Lorenz University Laboratory for Orthopedic Surgery, commemorating the 100th anniversary of the birth of Adolph Lorenz. Dr. Lorenz died on Feb. 12, 1946, at the age of 92. He was known chiefly for his bloodless surgical intervention and repair of congenital dislocation of the hip, which had previously been considered incurable. The workroom where Lorenz put his ideas into practice was very modest. When Lorenz left the surgical clinic and looked for a place to work, he could not find any room other than a former hospital kitchen in the second court of the General Hospital. This kitchen then was subdivided into a small waiting room for patients, a small operating room, and a larger room for examination and treatment. In this way, the University Laboratory for Orthopedic Surgery was founded in 1885, but no accommodations were available for hospital treatment. Two conditions had to be fulfilled in order to perform surgical and conservative interventions in a large number of patients despite this handicap. They were simplicity and freedom from risk in all procedures. Consequently, osteotomies and tenotomies were performed subcutaneously without loss of blood, osteoclases when possible, and in addition the "moulding redressement," a method devised by Lorenz for the repair of various contractures of joints. By using an immobilizing plaster of paris cast, the patients were discharged after two to three days of observation. For this purpose, Lorenz had improved the technique of plaster casts so that damage caused by pressure or circulatory lesions was no longer to be feared. This technique also made possible successful treatment of bone and joint tuberculosis with plaster casts.

The items in these letters are contributed by regular correspondents in the various foreign countries.

In 1914, at the beginning of World War I, the outpatient department was moved to the ninth court of the General Hospital; by adding wards and beds, hospital treatment became possible and the major tasks of civilian and military orthopedics could be performed adequately. Lorenz remained as the head of the orthopedic department until 1924, when he reached the age of retirement.

CHILE

Anatomopathological Aspects of Tuberculosis in Chile.—At a meeting of the Pan-American Congress of Tuberculosis held in Caracas in December, 1953, Prof. H. Orrego and his co-workers reviewed 5,700 autopsies performed on patients dying of tuberculosis between 1936 and 1953. The nodulopulmonary type of tuberculosis is extremely rare in persons over 15 years of age. The period of hospitalization prior to death did not exceed three months in 52% of the adults and 80% of those dying with the nodulopulmonary form of tuberculosis. The authors conclude from this that the patients are hospitalized too late. The low proportion of pure caseous (3%) and caseocavernous types (12%) led the authors to conclude that Chile is coming out of the massive epidemic phase and that the Chilean population no longer presents the characteristics of a virgin race to tuberculous infection. In about 75% of the autopsies, a fibrous reaction was found, indicating a change in the epidemiological position of the Chilean adult as regards tuberculosis in the last 15 years. Miliary dissemination in the adult type occurs in only 4.5%, but in the nodulopulmonary type it occurs in 37.4%. Pleural involvement confirmed at autopsy was relatively low (11%). Tuberculous meningitis as a complication was present in 17% of the adults and 31% of those with the nodulopulmonary type of the disease in this series. In the adult, tuberculosis was present in the liver in 850 patients, the spleen in 751, the kidney in 537, and the genital organs in 455. Tuberculous empyema occurred in only 3%. Amyloidosis was a complication in only 6.1% and involved in the order of decreasing frequency the spleen, liver, kidneys, suprarenal glands, intestines, and pancreas.

The peritoneal lymph nodes were involved in 78.5% of the patients with nodulopulmonary tuberculosis. The cause of death was cachexia in 50% of the patients with the nodulopulmonary type and in more than 70% of those with the adult type. Meningitis was the cause of death in 116 of 373 patients with the nodulopulmonary type. The authors compared the findings in 204 patients not treated with streptomycin and 55 patients who were so treated. The two groups were comparable as regards age and sex. No significant differences were found in relation to pleural and meningeal complications. Cavities in the treated group were larger and older and frequently showed pleural perforations, but fresh cavities were less frequent. In the group that received streptomycin, progress of the disease was slower. Nodular, laryngeal, pulmonary, and intestinal involvement was less frequent in the treated group. Fatty changes in the liver were found less frequently and the acute reinfection form of the disease was not found at all in the treated group, but the most striking feature was the tendency for streptomycin to transform exudative into productive processes.

Endocarditis Treated with Penicillin.—Prof. Oscar Avendaño and co-workers reported (*Revista médica de chile*, January, 1954) on 47 patients with subacute bacterial endocarditis treated with penicillin and observed for at least six months. The authors based their diagnosis in each case on the finding of evidence of valvular lesions, positive blood culture, etc. The patients were between 10 and 60 years of age, with the greatest number between 20 and 40 years. In 34% the valvular lesion was mitral, in 17% aortic, and in 45% mitroaortic; congenital heart disease was present in the remaining 4%. In 77% the duration of the disease prior to the initiation of the treatment was less than four months. Congestive heart failure was present prior to the treatment in 48.9%. Positive blood culture was obtained in only 42.6%. In 80% penicillin was given every three hours day and night. In the remaining 20%, the treatment was so varied that no definite conclusions could be drawn. If the treatment is continued for less than 30 days, the results are poor in about 92% of the patients, but, if it is continued for more than 30 days, the treatment failures are only 45%. The results were also poor in 71.4% of the patients receiving less than 30 million units of penicillin and in only 52% of those who received 30 to 60 million units.

If we consider as cured all patients who six months after the treatment do not show any sign of infection, 45% in this series were cured. The elapsed time between the onset of the disease and the beginning of the treatment has an important bearing on the prognosis. The earlier the treatment is begun the better the prognosis. The patients with plurivalvular involvement had a worse prognosis than those with monovalvular involvement. Treatment failure was observed in 70% of those with a negative blood culture and in only 35% of those with a positive culture. The mortality for the group was about 50% at the end of the first year and 60% at the end of three years. The mortality was greatest in the group with combined mitral and aortic lesions and in those with congestive heart failure.

ENGLAND

Feeding the World.—A discussion on the rapid increase of world population and the consequent need of increasing food production took place in the House of Lords on April 28. Viscount Samuel pointed out that the population of the world today (2.5 billion) was two and a half times what it was 100 years ago and if unchecked would be 5 billion by the year 2000. If food production does not keep pace with this, starvation, pestilence, and war will keep the population in check unless births are deliberately restricted in many countries. Viscount Samuel pointed out that there were enormous opportunities for extending the areas under cultivation and for increasing the existing yields. The peaceful development of atomic or solar energy might help those countries lacking natural sources of energy. Plankton, which could be harvested in unlimited amounts from the sea, could serve as an important source of protein and vitamins, if only it could be processed and made palatable. An American scientist has already discussed the cultivation and use of Chlorella, a green alga, as a rich source of vegetable protein. Lord Boyd-Orr, an eminent nutritionist, said it was easy enough in theory to increase food production, but not so easy in practice, because in some Eastern countries there were often social, religious, and economic obstacles to be overcome. Increased food production might upset the economic balance, because it would necessitate an increase in industrialization, which we were already witnessing in India, and increased purchasing power. This would upset existing world markets. The Archbishop of York said that we should eradicate serious diseases from tropical countries and raise the standard of living.

Lord Beveridge referred to what had been called "death control" or the prolongation of life by the welfare state through economic and medical means. In western countries people were living longer, and it was clear that "death control" necessitated birth control in some form. Lord Simon pointed out that it had taken nearly 200 years to reduce the death rate to 40 per 1,000. If India applied western health measures, her population would increase not by 5 million a year but by 10 million. Industry and agriculture could not keep pace with this. The Indian government's five year plan included the initiation of a campaign to limit the size of the population. Lord Stamp, who is a medical microbiologist, stressed the need for research on the yeasts and algae, so that they could be made available and palatable to man. They have a high fat and protein value, two components lacking in eastern diets. He also said that the photosynthetic power of sunlight in building up plant proteins might be used and that they could be extracted from leaves and used as food. Earl De La Warr said that the real problem was that agriculture must keep pace with advances in medicine.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Bacterial Endocarditis: An analysis of 52 Cases. W. Newman, J. M. Torres and J. K. Guck. Am. J. Med. **16:**535-542 (April) 1954.

Of 52 patients with bacterial endocarditis admitted to the Bronx Veterans Administration Hospital between August, 1946, and January, 1953, correct clinical diagnosis was made in 37 patients, was suspected in 7, and was neither made nor suspected in 8 up to the time of necropsy. Thirteen of the 52 patients were inadequately treated, while 39 received adequate treatment with a minimum dose of 1,200,000 units of penicillin or 3 gm. of chlortetracycline (Aureomycin), oxytetracycline (Terramycin), or chloramphenicol daily for at least two weeks. Of the 39 patients, 12 died with refractory infection and 27 (69%) were cured of their infection. One-third of the 27 patients died of congestive heart failure, one-third are alive but disabled, and one-third are alive and asymptomatic. The length of follow-up in the 18 living patients varied from six months to five years. All 13 inadequately treated patients died. The over-all mortality was 34 of 52 patients, or 65%, and the mortality rate in the adequately treated patients was 21 of 39, or 54%. These results indicate that often treatment is too little and too late. Clinical and pathological evidence of renal insufficiency was observed in eight patients, all of whom died from an active infection. In none of the patients who died with a cured infection was there clinical evidence of renal insufficiency at the time of death. Of the 18 patients who were cured of their infection and who are still living, only one has evidence of renal insufficiency attributable to bacterial endocarditis. Bacteriological cure of endocarditis seemed to have a beneficial effect on the renal lesions capable of causing insufficiency in this group of patients. Thirty-four of the 52 patients had congestive heart failure. In 5 of the 34 patients, congestive heart failure anteceded the bacterial endocarditis, in 8 congestive heart failure developed apparently as the first symptom of their endocarditis, and in the remaining 21 it developed during the course of the endocarditis. In eight patients auricular fibrillation occurred early in the course of bacterial endocarditis. Congestive heart failure and auricular fibrillation should not be considered rare findings in this disease. The presence of congestive heart failure did not seem to affect the bacteriological cure rate of bacterial endocarditis, since the cure rate in the 23 adequately treated patients with congestive heart failure was 65%, which compares favorably with the 69% cure rate for the group as a whole. Congestive heart failure had an adverse effect on the mortality rate in adequately treated patients. The mortality rate in adequately treated patients with congestive heart failure was 74%; this compares unfavorably with that of 54% for this group as a whole. The degree of pre-existing deformity of the cardiac valves seems to be an important factor in the appearance of congestive heart failure in the course of bacterial endocarditis. Blood cultures were taken in 48 of the 52 patients. As a practically important result of their observation, that when a positive blood culture was obtained it appeared in at least one of the first four cultures taken, the authors limited to four the number of blood cultures taken in suspected cases of bacterial endocarditis. Positive blood cultures were obtained in three patients who were afebrile; this observation illustrates the indolent nature that bacterial endocarditis may assume. Contrary to other reports the authors observed no effect from inadequate sporadic antibiotic therapy on their success in obtaining positive blood cultures, and they also were able to obtain positive blood cultures from patients whom they thought were receiving adequate antibiotic therapy but were not doing well clinically.

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Pulmonary Fibrosis and Cor Pulmonale in Sarcoidosis. J. J. McCort and P. J. Pare. Radiology **62:**496-504 (April) 1954.

Six cases of sarcoidosis are presented in which the diagnosis was established by (1) histological evidence of the presence of the granuloma, (2) the exclusion, in so far as possible, of a known causative agent, and (3) clinical and radiological evidence of involvement of two or more organ systems. In these six patients, followed up for a period of 2 to 11 years, there was clinical and/or radiographic evidence of progressive pulmonary fibrosis. In two of the patients, the findings were confirmed at autopsy. Although sarcoidosis is in general a benign disease, in a small percentage of the patients suffering from it, severe pulmonary fibrosis will develop, leading to pulmonary insufficiency and right-sided heart failure. These patients have an increased susceptibility to fatal intercurrent pulmonary infection.

Idiopathic Pulmonary Hemosiderosis. F. G. Fleischner and A. L. Berenberg. Radiology **62:**522-526 (April) 1954.

Thirty-one cases of idiopathic pulmonary hemosiderosis from the literature are reviewed and a new case reported in a 2-year-old Negro boy. The child had severe iron deficiency anemia and diffuse pulmonary consolidations along with other signs and symptoms of this disease. The diagnosis was corroborated by demonstration of iron pigment in a biopsy specimen obtained by lung puncture. The disease is characterized by hemorrhages in the lung, without signs of generalized hemolytic tendency. It is not part of a generalized hemosiderosis, has no relation to hemochromatosis, since there is no general disturbance of iron metabolism, and is different from the "brown induration of the lung" in chronic pulmonary congestion usually caused by mitral stenosis. Primary defective formation of the pulmonary tissue, with lack of elastic elements or a vasomotor disorder, is believed to be the underlying causative factor. Interstitial fibrosis is common in advanced cases. The radiographic findings, decisive in the diagnosis, consist of symmetrical homogeneous opacities, densest in the central portions of the lung. In periods of remission, a fleck-like, reticular pattern may complicate the roentgen appearance. These findings and the lack of corresponding manifestations on physical examination in the absence of notable respiratory infection combined with hypochromic anemia without evidence of generalized hemolytic tendency should suggest idiopathic pulmonary hemosiderosis. The clinical course, characterized by acute attacks, and finally demonstration of hemosiderin in the sputum, gastric washings, or lung tissue obtained at biopsy should establish the diagnosis.

Procaine Amide Hydrochloride in Treatment of Paroxysmal Tachycardia (Nodal and Ventricular). G. Borreni and V. Casadio. Gazz. med. ital. **113:**46-50 (Feb.) 1954. (In Italian.)

Procaine amide hydrochloride was used to treat three patients with paroxysmal tachycardia. In the first patient, a woman in poor general condition with malignant abdominal lymphogranulomatosis, an attack of nodal tachycardia occurred during roentgen therapy. In the second patient, a young man with congenital pulmonary sclerosis, a severe attack of ventricular tachycardia occurred during cardiac catheterization. The third patient, a 42-year-old woman with a disease of the gallbladder and already in the menopause, had had frequent transitory attacks of tachycardia for two years. She was admitted to the hospital when one of these attacks had been present for 24 hours. These patients were given the drug intravenously at the rate of 100 mg. per minute; 10 cc. of a 10% solution was sufficient for two patients while the other was given a second injection four hours

later. The sinus rhythm was quickly restored. To maintain it, the patients were given two 300 mg. capsules of the drug during the next 24 hours. Disturbances, such as nausea, vomiting, and profuse sweating, which were reported by other authors, did not appear. The only side-effect was a feeling of prostration and fainting accompanied by slight and transitory vertigo. The arterial pressure that was low at the beginning of therapy remained unchanged in two and rose in one patient. The authors compare the electrocardiograms taken before and after the therapy. They conclude that procaine amide hydrochloride gives good results in the treatment of numerous cardiac arrhythmias and is especially indicated in ventricular paroxysmal tachycardia.

Carcinoma of the Lung Simulating Early Rheumatoid Arthritis. K. A. J. Järvinen and T. Kumlin. Ann. Rheumat. Dis. **13**:52-55 (March) 1954.

Järvinen and Kumlin state that while it is well known that lung affections may be accompanied by so-called hypertrophic pulmonary osteoarthropathy, which seems to be almost regularly associated with mild joint symptoms, little attention has been paid to the misleading resemblance of these joint symptoms to those seen in the early stages of rheumatoid arthritis. It was their main object to investigate how frequently the clinician finds difficulty in the differential diagnosis of the joint symptoms accompanying carcinoma of the lung. They analyzed the records of 1,008 patients hospitalized with a diagnosis of rheumatoid arthritis and of 106 patients with a diagnosis of bronchial asthma. Follow-up studies on the group with rheumatoid arthritis indicated that a bronchial carcinoma was probably the causative factor in the joint symptoms in three cases (0.3%; 1% of the patients over 50 years of age). The group with bronchial carcinoma included two patients who had previously been treated for rheumatoid arthritis, although the symptoms were probably caused by the lung process. These findings indicate the importance of examining the lungs of patients presenting the symptoms of rheumatoid arthritis. In men with arthritic symptoms combined with acromegalic features and/or clubbing of the fingers and toes, carcinoma of the lung should always be suspected.

The Blood Cerebrospinal Fluid Barrier to Bromide in Diagnosis of Tuberculous Meningitis. L. M. Taylor and H. V. Smith. Lancet **1**:700-702 (April 3) 1954.

The dominant factor in the prognosis of tuberculous meningitis is the stage the disease has reached at the outset of treatment. In a series of 80 consecutive cases treated at Oxford between December, 1949, and July, 1952, the over-all mortality was 37.5%. However, none of the 21 patients who were still fully conscious, rational, and without focal neurological signs when their treatment was begun died. In this stage of the disease the diagnosis can be most difficult. Studies on the passage of bromide from the blood to the cerebrospinal fluid has proved helpful in recognizing tuberculous meningitis early. The authors describe a test in which sodium bromide as the test substance is given by mouth or by intravenous injection. The oral dose for adults is 1 gm. three times a day for three days and for children 0.25 to 0.5 gm. three times a day for three days. The intravenous dose for adults is 8 gm. and for children 2 to 4 gm. given in a single injection. The intravenous solution is made up by dissolving 8 gm. of sodium bromide in 30 ml. of sterile distilled water. After oral administration, a period of two full days is allowed for equilibrium to become established between blood and cerebrospinal fluid; after intravenous administration a 24 hour period is sufficient. In the absence of detectable organic disease of the central nervous system, the serum contains two or three times as much bromide as does cerebrospinal fluid. Active tuberculous meningitis appears to have the same effect on the blood cerebrospinal fluid barrier as does the intrathecal tuberculin reaction. The rule for the ratio was profoundly depressed but returned to normal when the infection was brought under control. Even when intrathecal tuberculin was not used in treatment, values of 1 or less were common. This fall in the ratio appears early in the illness. Since the barrier to bromide is more frequently and more seriously impaired in tuberculous meningitis than in other varieties of meningitis with comparable changes in the cerebrospinal fluid, the bromide test may be helpful in the early diagnosis of tuberculous meningitis. A low bromide ratio is not pathognomonic of tuberculous meningitis, and the result of the test must not be considered apart from other clinical and pathological findings. In cases in which the picture is compatible with the diagnosis of tuberculous meningitis, a low bromide ratio is reason for beginning treatment without delay.

Cure of Meningococcic Meningitis and Waterhouse-Friderichsen Syndrome Obtained with Cortisone and Antibiotics. F. Hugentobler and R. Hoigné. Schweiz. med. Wchnschr. **84**:416-417 (April 10) 1954. (In German.)

A 22-year-old man with meningococcic meningitis and Waterhouse-Friderichsen syndrome was in coma when admitted to the hospital. He was immediately given penicillin, sulfamethazine (Elkosin), desoxycorticosterone acetate (Percorten), and 100 mg. of cortisone. The patient was still in coma on the third hospital day, but the temperature dropped from 40 C (104 F) to a subfebrile degree. The lowest blood pressure recorded during this therapy was 85/30 mm. Hg, which corresponded in time to the most critical period of the disease. The number of cells in the cerebrospinal fluid on the fourth hospital day was reduced to 5,700 as compared to 26,000 on admission. The patient became responsive on the fifth day, but was still somewhat somnolent. On the sixth hospital day, there again was a rise in temperature despite further decrease of cells in the cerebrospinal fluid, and pericarditis and pleuritis developed. The use of cortisone was discontinued. Temperatures of 40 C continued, and dyspnea and cyanosis increased despite daily administration of 6 million units of penicillin. On the 11th hospital day, chloramphenicol (Chloromycetin) was substituted for penicillin. Defervescence took place in five days. Complete recovery occurred within eight weeks from the day of admission to the hospital. Adequate treatment with cortisone and antibiotics made possible the cure of a disease that previously was rapidly fatal.

Persistent Left Superior Vena Cava: Survey of World Literature and Report of 30 Additional Cases. F. S. Winter. Angiology **5**:90-132 (April) 1954.

The postmortem findings in 170 cases of wholly persistent and 4 cases of partially persistent left superior vena cava in human beings as reported in the world literature are reviewed and analyzed. A report is made of 30 new cases consisting of 28 cases of wholly persistent and 2 cases of partially persistent left superior vena cava observed at Hahnemann Hospital. This group includes, in addition to 10 cases seen at autopsy, 8 cases verified by exploratory thoracotomy and 12 cases in which the diagnosis of left superior vena cava was made by cardiac catheterization and/or angiocardiography. The anatomic variations and embryologic aspects of left superior vena cava are discussed in association with closely allied structures of the venous system, such as the anastomosis at the level of the innominate vein, the coronary sinus, the cardiac and pulmonary veins, and the inferior vena cava. Of the series of 174 cases of persistent left superior vena cava from the world literature, conclusive evidence of associated cardiac septal defects was found in 59. Of the 30 cases from Hahnemann Hospital, 25 presented evidence of cardiac septal defects—13 proved either at surgery or autopsy and 12 proved by cardiac catheterization and/or angiocardiography. The association of cardiovascular anomalies with persistent left superior vena cava is discussed in relation to normal and abnormal development of the sinus venosus and atrial portion of the heart. Roentgen diagnostic procedures, such as conventional film study, angiocardiography, and cardiac catheterization, utilized in the detection of left superior vena cava in the cases from Hahnemann Hospital are evaluated.

Current Treatment of Pulmonary Tuberculosis. J. J. Waring. Dis. Chest. **25**:361-373 (April) 1954.

Waring states that the six major trends evident in the treatment of tuberculosis are (1) toward including early and minimal tuberculosis in chemotherapy; (2) toward greater freedom of activity, less rigid bed rest for patients without constitutional

symptoms while under the protection of chemotherapy; (3) toward greater recognition of the value of the tuberculin test in identifying the date of conversion from negative to positive and, therefore, the date of infection; (4) away from temporary reversible collapse procedures (pneumothorax, pneumoperitoneum, and phrenic operations); (5) away from surgical procedures that may reduce pulmonary function (thoracoplasty); and (6) toward excision of residual caseonecrotic lesions. Chemotherapy should be employed in highly exposed persons in whom the tuberculin test shows recent conversion, whether or not they have visible primary lesions or radiologically "active minimal tuberculosis." Chemotherapy and excision of residual caseonecrotic lesions are active means to prevent relapse of minimal tuberculosis. Although combinations of chemotherapeutics including 1 gm. of streptomycin two or three times weekly rarely cause damage to the eighth nerve, the preparations of equal parts streptomycin and dihydrostreptomycin are adequately effective and reduce the toxic effects during or after long-continued therapy. The combined use of streptomycin, isoniazid, and *p*-aminosalicylic acid is recommended for minimal tuberculosis in adults and the severer complications of tuberculous disease at any age. Under special circumstances in adults streptomycin or isoniazid may be withheld temporarily, but *p*-aminosalicylic acid or oxytetracycline (Terramycin) must be given simultaneously. Special regimens are required for the treatment of primary tuberculosis in children.

Alcoholism and Hepatic Disease. S. Mårtens. Nord. med. **51**:439-444 (March 25) 1954. (In Swedish.)

Needle aspiration biopsy was performed in 32 men admitted with the diagnosis of alcoholism, based on continuous or periodic misuse of alcohol, pathological craving for alcohol, occurrence of sequels such as tremor, tension, anxiety, and restlessness after consumption of larger amounts of alcohol, and the need for a morning drink. In 20 cases, the pathological-anatomic diagnosis was fatty degeneration of the liver, slight in 9 cases, moderate in 3, pronounced in 8. The occurrence of fatty degeneration is correlated to the severity of the alcoholism. The hepatic changes seem to be more frequent in constant alcoholism than in periodic alcoholism. Signs of lowered resistance to alcohol and nervous or mental conditions due to alcohol are correlated to fatty degeneration of the liver. The concept is apparently verified that deficient diet in the alcoholic is an important cause of hepatic changes.

Hygienic-Epidemiologic Evaluation of Infectious Hepatitis. H. Natvig and R. A. Jensen. Nord. med. **51**:432-439 (March 25) 1954. (In Norwegian.)

From 1949 to 1952, 316 cases of infectious hepatitis were reported in Oslo. Of these cases, 170 (in 77 men and 93 women) are regarded as probable epidemic hepatitis. No inoculation had been given for from six weeks to six months before the onset of the disease, and in 52 cases there was evidence pointing to the source of infection. In the second group of 70 cases (in 22 men and 48 women) of probable inoculation hepatitis, the patients had had inoculations within from six weeks to six months before the outbreak of the disease and were from a milieu without known case of infectious jaundice. The clinical picture also agreed with inoculation hepatitis. Eighteen of the patients were hospital personnel. Especially in blood tests and blood transfusion, but also in other penetrations of the skin or mucous membrane, care must be taken to avoid inoculation hepatitis. In the final group of 76 cases (in 35 men and 41 women) inoculation hepatitis could not be excluded, but epidemic hepatitis was equally possible. Epidemic hepatitis is a grave infectious disease and like poliomyelitis is an intestinal virus disease transmitted by the intestinal-oral route. Apart from gamma globulin, which because of cost and brief effect can be used only in exceptional cases, there is no specific protection against the disease. The campaign against it must consist of general hygienic measures. In the period considered, there was an increase in epidemic hepatitis from year to year, while the number of cases of inoculation hepatitis decreased, perhaps reflecting the results of protective measures.

Primary Hyperparathyroidism: Five Cases in One Family. R. N. Frohner and J. C. Wolgamot. Ann. Int. Med. **40**:765-773 (April) 1954.

Evidence obtained from the study of five siblings, each of whom was found at operation to have one or more parathyroid adenomas, supports the belief that primary hyperparathyroidism may be a familial disease. Rickets (osteomalacia), pregnancy, calcium deficiency, and renal insufficiency, all of which are known to produce diffuse hyperplasia of the parathyroid glands, could not be considered as primary factors in the condition found in these patients. Their consumption of milk was average, and they had all received cod liver oil regularly in childhood. Only one had any impairment of renal function, though all had renal disease (nephrocalcinosis in three, a staghorn calculus in one, and hematuria and renal colic due to stone in the other). The possibility of excess phosphate ingestion cannot be ruled out at present; the soil of the patients' home locality, however, does not differ significantly from Montana soil in general. Studies of the drinking water, which comes from a creek, are now under way. The patients' father died from renal failure at the age of 65. His wife was told that he did not have diabetes. Hyperparathyroidism cannot be proved in his case, but during the last 15 years of his life he suffered from kyphosis, polyuria, nocturia, and weakness—all classic symptoms of parathyroid disturbance. The patients' mother is in good health, but she has a suspiciously low serum phosphorus level. A low serum phosphorus level was also found in an otherwise normal sibling of the patients. Study of the rest of the family, consisting of another sibling and seven children of the patients, showed that all were normal. Investigation of the patients for (1) tumors of the pituitary gland and pancreatic islet cell tumors and (2) duodenal ulcer—two sets of abnormalities that have been described as occurring with hyperparathyroidism—proved negative.

Diabetes Mellitus in a Mongoloid. T. E. Cone Jr. J. M. Soc. New Jersey **51**:66-67 (Feb.) 1954.

Cone presents the history of a mongoloid child, who was first hospitalized when she was 2½ years old because of increasing listlessness, polyphagia, and polyuria. A diagnosis of diabetic acidosis was made on the basis of 4+ glycosuria and acetonuria associated with a blood sugar level of 530 mg. per 100 cc. At the end of three weeks' hospitalization she was discharged and required 4 units of protamine zinc insulin daily. Later her daily requirements rose to 12 units of this type of insulin. During an attack of acute tonsillitis, her blood sugar value was 464 mg. per 100 cc. When she was nearly 4 years old she was hospitalized for reevaluation of the severity of the diabetes and for treatment of an upper respiratory infection. She had a fasting blood sugar level of 220 mg. per 100 cc. and 3+ glycosuria. Several fasting blood samples revealed an average glucose value of 240 mg. per 100 cc. (range 123 to 350 mg. per 100 cc.). Her insulin requirement had increased to 10 units of regular insulin and 15 units of protamine zinc insulin daily. Her glucose tolerance curve was compatible with the diagnosis of diabetes mellitus. The epinephrine tolerance values were somewhat lower than normal. The author found no previous reports in the literature on the association of mongolism and diabetes mellitus, but he does cite previous studies on the sugar metabolism of mongoloid patients. The sugar tolerance curve in mongolism usually shows a delayed glycemic response, and intravenous glucose tests on mongoloid patients showed that in most instances the blood glucose level continued to rise after the second half-dose instead of falling normally. This is further evidence that the carbohydrate metabolism is abnormal in mongolism. Cone hopes that observations like these may help to throw light on the pathogenesis of mongolism.

Polyps of the Colon and Rectum: Their Incidence and Relationship to Carcinoma. J. A. Rider, J. B. Kirsner, H. C. Moeller and W. L. Palmer. Am. J. Med. **16**:555-564 (April) 1954.

Of 7,487 patients undergoing proctoscopic and x-ray examination as part of a routine gastrointestinal examination between Jan. 1, 1947, and Dec. 31, 1951, 401 had polyps of the rectum or colon. Single polyps were observed in 352 of the 401 patients, and more than one polyp in 49. Between Jan. 1, 1952,

and Dec. 31, 1952, 297 (84.4%) of the 352 patients and 38 (77.6%) of the 49 patients returned for a follow-up examination. New polyps were found in 57 (19.2%) of the 297 patients and in 17 (44.7%) of the 38 patients. The histological appearance of the new polyps did not differ significantly from that of the original lesion. The tendency to new polyp formation was fourfold greater among patients with polyps than in persons without polyps. New polyps appeared eight times more likely to develop in patients with multiple polyps on initial examination than in normal persons. The incidence of carcinoma of the colon in the 7,086 patients without polyps was 2.1%; carcinoma of the colon was found in 43 of the 401 patients with polyps, an incidence of 10.7%. There were 33 carcinomas in the 352 patients with a single polyp originally (9.4%). Carcinoma was found in 10 of the 49 patients with multiple polyps originally (20.4%). There were 13 instances of carcinoma coexisting with polyps (3.4%); in 7 patients (1.7%) carcinoma of the colon was found some time after the discovery of the original polyp. Carcinoma of the colon and rectum occurs with five times greater frequency in patients with polyps than in persons without polyps. Carcinoma is twice as likely to develop in patients with multiple polyps as in those with a single polyp. The polyps were removed at proctoscopy in 312 patients (78%); surgical excision was required in 73 (18%); in 16 patients (4%) the polyps were not removed initially. Follow-up examination was performed in 262 (83.9%) of the 312 patients treated by local removal; recurrent polyps were discovered and removed in from three to six months in 8 patients (3%). The incidence of recurrence of polyps after local removal appears to be low. The histological appearance of the original and recurrent lesion was similar, suggesting that local excision did not increase the likelihood of malignant transformation. Sixty-two (85%) of the 73 patients treated by surgical excision returned for reexamination; none had demonstrable recurrence of the lesion. Eleven of the 16 patients not treated originally returned for reexamination; in 4 there was no evidence of the previously described polyp; and in each instance the polyp had been estimated as less than 4 mm. in size. The original polyps were again demonstrated after a period of one to five years in the remaining seven patients. Six of these polyps were removed locally at the time of reexamination; one was not removed because of the advanced age of the patient. One polyp contained a focal area of malignant adenoma; the remaining lesions were benign, adenomatous polyps. No conclusive direct evidence was obtained in the authors' study to prove that benign adenomatous polyps undergo transition to carcinoma.

Familial Intestinal Polyposis with Pigmentation of the Face, Lips, Mouth, and Digits. C. R. Savage. Brit. J. Surg. **41**:366-367 (Jan.) 1954.

The distinctive features of this syndrome are melanin spots scattered around and inside the mouth and polyposis of the small intestine. Savage adds a case history to the 30 previously reported in the literature. The patient, aged 28 in December 1951, underwent laparotomy for intestinal obstruction in 1943. At that time, three intussusceptions from adenomatous polyps of the small intestine were found. The intussusceptions were reduced and the polyps excised. Since that time he had had four more operations for obstruction, at which more polyps were removed and segments of intestine were resected. Numerous attacks of pain and vomiting had responded to conservative treatment. At present he has one or two attacks weekly. An operation performed January, 1952, revealed widespread polyposis of the small intestine from the duodenum almost down to the ileocecal valve. There was a chronic intussusception into the ileum. The polyp responsible for this was resected, together with an internal traction diverticulum, as were several large polyps in the jejunum that were considered most likely to be starting points of future intussusceptions. Other reports have indicated that the syndrome may be familial, but this patient states that neither his parents nor any of his five brothers have pigmented spots or any symptoms of gastrointestinal upset. His only child, a boy 4 years old, has had similar pigmented spots around his face and mouth since birth. It is not known whether he, too, has polyposis.

Small-Intestine Polyposis Associated with a Characteristic Circumoral Pigmentation. M. Smith. Brit. J. Surg. **41**:367-369 (Jan.) 1954.

The patient described is a 29-year-old woman, with black pigmentation on the lips and oral mucosa, who was hospitalized with a five hour history of colicky pain in the right iliac fossa accompanied by nausea and vomiting. Her history included operations for multiple polyposis one and three years previously and an operation for intussusception 12 years earlier. In view of this history and the sudden onset of pain on this occasion, a provisional diagnosis of intussusception was made, and on laparotomy an ileoileal intussusception with approximately 18 in. of bowel was found. This was reduced with some difficulty. Because of the recurrent nature of the condition, approximately 4 ft. of bowel was excised. The surgical specimen was studded throughout its length with innumerable polypi, the majority of which were minute and measured a few millimeters in diameter; a few were larger. This case and 30 previously reported cases of association of oral pigmentation with attacks of colic and intestinal polyposis indicate that this is a definite syndrome. It is possible that in many other cases of intestinal polyposis, the oral pigmentation was overlooked. While the familial occurrence of this disorder has been established by some investigators, sporadic cases, like the one described here, suggest that a family history is not essential in this syndrome.

Hemorrhage in Pernicious Anemia. G. P. Bisgeier. J. M. Soc. New Jersey **51**:94-96 (March) 1954.

Pernicious anemia occurs mostly late in adult life, is commoner in men, and is relatively rare in Negroes. The case reported is unusual in that it occurred in a Negro woman. The presenting symptom in April, 1952, was hemorrhage from the mouth and nose. Pernicious anemia had been diagnosed during a period of hospitalization in 1945, when the woman was 34 years old. At that time hemorrhagic tendencies were likewise evident, and a tendency to bleeding had been noticed again in 1951 when she was treated for an incomplete abortion. A review of the literature confirms the impression that, while thrombocytopenia is common in pernicious anemia, hemorrhages are rare. Biermer, in his original description, mentions a high incidence of retinal hemorrhages and cutaneous petechiae and occasional gastrointestinal and genitourinary bleeding. Minot reported in 1918 a case of "purpura hemorrhagica" due to pernicious anemia, stating that it was a rare finding. Held agrees that bleeding may occur, but other authors do not. In the author's case, the platelets were considerably below the so-called critical level. It seems that the bleeding was caused by thrombocytopenic purpura secondary to pernicious anemia.

A New Treatment for Pruritus Ani. C. F. Baumeister. Journal-Lancet **74**:89 (March) 1954.

Baumeister made the observation that patients receiving cortisone therapy for various conditions frequently obtained relief from chronic pruritus ani. An ointment of 2 cc. (50 mg.) of cortisone suspension with enough aqueous base to make a total of 1 oz. was applied for treatment of pruritus ani. Palliative results were obtained in 70% of the patients. In cases with an element of infection, ointments containing bacitracin, polymyxin, and zincundate (Desenex) were used in addition. The hard, glazed, varnish-like coating found in advanced cases must be removed by suitable softening ointments. The cortisone ointment was used in the more stubborn cases that had proved refractory to other measures. The fact that a report in a dermatological journal had described the parenteral use of corticotropin in anogenital pruritus stimulated Baumeister to describe his experiences with this local treatment.

Heredity of Joint Diseases. R. M. Stecher. Eugenics Quarterly **1**:16-20 (March) 1954.

Heredity may be a factor in producing joint disease, but its mechanism varies. Stecher considers two main groups of joint diseases, osteoarthritis, a degenerative joint disease, and rheumatoid arthritis, a general systemic disease producing its most serious effect in the joints. Studies to investigate the heredity

of Heberden's nodes (osteoarthritis of the fingers) were made on 8,000 persons. The results indicated that the factor in Heberden's nodes is a single autosomal character, sex influenced, dominant in women and recessive in men. The onset of Heberden's nodes in women is often related to the menopause, since about half the women first noted finger enlargement within three years of the last menstrual period. Osteoarthritis of the hip occurs in patients who earlier had Legg-Calvé-Perthes disease or slipped epiphysis of the hip and also in those with congenital dysplasia of the hip. Evidence is accumulating to indicate that Legg-Calvé-Perthes disease not only runs in families but seems to be inherited as a single recessive trait. Congenital dysplasia of the hip seems at least to run in families, but how it is inherited has not been clearly demonstrated. Osteoarthritis of the spine, considered as another manifestation of osteoarthritis, seems to occur without recognizable hereditary influence. In a study of the genetics of rheumatoid arthritis, the families of 224 patients, including 1,667 persons, were compared with the families of 488 controls, composed of 2,759 persons. Three per cent of all relatives of patients were found to have been affected compared to 0.6% in the control series. In relatives over 50 years of age the figures were 5% and 0.9%; that is rheumatoid arthritis is found among relatives of affected persons five to six times as often as in the general population. Although heredity seems to play an important role in rheumatoid arthritis, secondary conditioning factors seem significant. The familial character of ankylosing spondylitis is indicated by the involvement of twins, brothers, fathers, and sons. Gout has been recognized as a hereditary disease, but the pattern of inheritance has not been clearly identified. There is evidence that rheumatic fever is inherited as a simple recessive character. The author feels that none of the aforementioned diseases justify control by eugenics or sterilization, but genetic studies are important and may play a significant role in the management.

Clinical Study of 136 Cases of Gout in Males. J. Sérane and R. Bonniot. Presse méd. **62:**507-508 (April 3) 1954. (In French.)

From their detailed study of 136 men with gout, the authors drew the following conclusions. Gout is a widespread disease with an incidence that is higher than commonly supposed. It develops as the result of overeating associated with some predisposing factor. Direct family inheritance of the disease existed in one-fourth of the authors' cases. Forms of gout that are called "atypical" are quite frequent. In almost 50% of cases, the attack occurs in a joint other than the metatarsophalangeal of the big toe; namely, the knee, ankle, and tarsus, in that order of frequency. In 20% of cases, all attacks occur in the big toe. In 41% of cases, gout begins in the toe and later spreads to the larger joints. In 24% of cases, the pattern is reversed, and the toe may not be attacked until late in the course of the disease. In 15% of cases, the toe is never attacked. The authors noted a remarkable incidence of attacks in the ankle and knee; they occurred at least once in 50% of the cases. Two or more joints were affected in 50% of the cases. When the major joints are involved, gout assumes a "rheumatic" quality and loses its specific, local quality. It is often febrile, especially in the acute polyarticular type. Tophi are seen in only 12% of cases. Persons with gout often suffer from neuralgia, myalgia, migraine, eczema, and lumbago. Uric calculi were found in one-third of the patients; this is the only true symptom of renal gout. Determination of blood uric acid is of great diagnostic value in atypical forms of gout; the urinary pH is also important. In general, gout has a worse prognosis when the symptoms appear before the age of 35 and when there is a hereditary factor. Persons with gout are not more susceptible to cardiovascular disorders than are persons who overeat and those with plethora. Symptoms of chronic nephritis with slight azotemia existed in 10% of 300 gouty persons examined, but those forms of gout with severe articular manifestations tend to be associated with chronic nephritis more than other forms. There appears to be a familial tendency to longevity among gouty persons. Those of normal weight live much longer than do obese persons with gout. Early adoption of a proper diet modifies both the "articular" and the "visceral" prognosis of gout.

Aplastic Anemia and Severe Hepatic Zonal Necrosis After Anti-Syphilitic Treatment. A. W. B. Edmunds. Brit. J. Ven. Dis. **30:**45-48 (March) 1954.

The 53-year-old man whose case is reported presented two complications of antisyphilitic therapy, aplastic anemia, which is rare, and hepatitis, which is relatively common. The hepatitis progressed and caused death from hepatic failure. Both the peripheral blood and the marrow indicated at the outset that the brunt of the damage was borne by the red blood cell series exclusively. There were, however, a few reticulocytes in the peripheral blood and some red blood cell precursors in the marrow, so that this case, in its early stages, cannot be classed with the very rare, pure, red blood cell aplasias. Leukopenia did not become evident until over two months after this patient was admitted to the hospital, and thrombocytopenia was never severe. Later the marrow showed aplasia of all elements. This trend in the marrow was prognostic of a fatal termination, but hepatic failure hastened death. There was no evidence of benefit to the hemopoietic system from dimercaprol, though improvement in the stomatitis (presumably due to bismuth) was dramatic. It is possible that dimercaprol postponed the development of agranulocytosis (and perhaps of thrombocytopenia). Bismuth may possibly have been a contributory cause of the marrow depression, but reports of blood dyscrasias after its use seem to be few. The hepatic lesion was a severe zonal necrosis amounting to almost massive necrosis. Though it was considered to be due to the virus of serum hepatitis and to have taken this severe course perhaps because of the anemia, organic arsenic cannot be ruled out completely, as it has been shown to cause zonal necrosis in animals eating a diet deficient in protein.

SURGERY

Chronic Ulcerative Colitis: Method of Ileo-Rectal Anastomosis. E. E. Dunlop. Australian & New Zealand J. Surg. **23:**184-189 (Feb.) 1954.

Dunlop states that in patients with ulcerative colitis, retention of about one-third of the rectum provides satisfactory continence and that a low ileorectal anastomosis can be carried out safely even in the presence of some rectal involvement provided that the lower segment of bowel is made functionless by a proximal ileostomy. This proximal ileostomy has the additional virtue that time is given for the ileum to take over storage function and for the ileal content to thicken before alimentary continuity is restored. The rectal stump may show considerable improvement during the period of rest. The operation is carried out in three stages. First, a double ileostomy is carried out through a small vertical incision over the right rectus muscle. The ileum selected must be healthy in appearance. In the second stage, excision of the distal ileum, colon, and proximal rectum is done, and in the third stage the ileostomy is closed. Four case histories are presented in which this operation was carried out. In the first three cases, the surgical stages were rather protracted. The patients, however, returned to work in the intervening periods. It is hoped that it may be practicable, in selected cases, to establish an ileorectal anastomosis and defunctioning ileostomy without delay. It is thought wise to delay the final closure for at least three months and to effect closure only when clinical and x-ray studies indicate favorable conditions.

Cessation of Circulation in General Hypothermia: III. Techniques of Intracardiac Surgery Under Direct Vision. H. Swan and I. Zeavin. Ann. Surg. **139:**385-396 (April) 1954.

Operations on the open heart were performed on 16 patients (children and adults), utilizing hypothermia. There were two deaths. Complete anatomic and physiological restorations were attained in the 14 survivors. Hypothermia was induced for the purpose of allowing a period of cessation of circulation compatible with such surgery under direct vision. Anesthesia was first induced with thiopental (Pentothal) given intravenously and occasionally followed by cyclopropane and then by ether. When the third stage of anesthesia was reached, the patient was placed in a tub of ice water, the temperature of which varied from 2 to 4 C (35.6 to 39.2 F). The rate of deep cooling varied with

the size of the patient. The shortest time required in the tub was 12 minutes (a small, thin child) and the longest, one hour and 20 minutes (an obese adult). The minimal temperature attained by the patients varied from 21 to 27 C (69.8 to 80.6 F), most patients falling into the 23 to 25 C (72.1 to 77 F) range. Temperature selected should be correlated to the procedure proposed. For pulmonary stenosis rarely requiring more than four minutes of arrest of circulation, 26 to 28 C (78.8 to 82 F) should be adequate. For interatrial septal defect requiring six to nine minutes of circulatory arrest, 24 to 26 C (75.2 to 78.8 F) may prove safe. After the surgical intervention the patient is replaced in the tub and rapidly warmed in water at 45 C (113 F). The authors believe that rapid cooling and warming are of value in reducing the hazards of hypothermia, the major of which is ventricular fibrillation. A method of defibrillating the heart by perfusing the coronary circulation with potassium chloride proved effective. The use of hypothermia was limited to isolated pulmonic valvular stenosis, tetralogy of Fallot, and interauricular septal defect for which the current operative techniques fall short of ideal or adequate treatment. The method of circulatory arrest by which a temporary dry field may be obtained within the heart consisted of a transsternal bilateral thoracotomy in the fourth interspace, ligation of the azygos vein, passing an umbilical tape around a short segment of the superior vena cava and another tape around the intrapericardial portion of the inferior vena cava, and producing occlusion of the cardiac inflow of blood by lifting up on these tapes after complete exposure of the heart. Forty-five seconds were allowed for the heart to empty. A clamp was then placed at the root of the aorta over the coronary arteries and the pulmonary artery was also clamped. In addition, tourniquets were tightened around the entire lung root bilaterally to occlude the pulmonary veins and to prevent the entrance of blood into the left side of the heart. At the conclusion of the intracardiac manipulation, the cardiac incision was clamped after the chest had been filled with isotonic sodium chloride solution so that the heart was beating under water and all air was expelled. To date the authors did not have any recognized episode of coronary or other air embolism while using this technique in three specific operations. Surgery under direct vision within the open heart in the course of hypothermia is felt to have been developed to a point at which it is sufficiently safe to warrant further trial and to explore its usefulness for the treatment of interventricular septal defect and mitral or other valvular stenosis or regurgitation.

Diagnosis and Therapy of Pulmonary Cysts. H. Seyfarth. Beitr. klin. Chir. **188**:137-158 (No. 2) 1954. (In German.)

Six cases of pulmonary cyst are reported in three women and two men between the ages of 38 and 59 and in a 5-year-old girl. In three patients a communication between the cyst and the bronchial tree could not be demonstrated clinically or pathologically, while such a communication was demonstrated in the other three patients. In two of the latter, this communication was valve-like, while it was free in one. Examination of the contents of four cysts revealed bleeding within the cyst, but in only one case did hemoptysis occur since a free communication with the bronchial tree did not exist in the other three cases. Two patients presented the clinical aspect of a threatening tension pneumothorax with cyanosis and dyspnea; this can be explained only by the poor communication of the cyst with the draining bronchus. In one of these two patients, displacement of the mediastinum with simultaneous occurrence of a large, anterior, upper mediastinal hernia to the healthy side was impressive. Extirpation of the cyst could be carried out in three cases. A segmental resection was performed in one case because of considerable adhesions; lobectomy was done in another case because of chronic inflammation of the adjacent area, and pneumonectomy was indispensable in the last case because of multiple cysts in the remaining lung at the same side of the thorax. All six patients tolerated the operation well, and there was no death. Except for one, all the patients had been admitted with an erroneous diagnosis, such as neuralgia associated with a mediastinal tumor, spontaneous tension pneumothorax, pulmonary tumor, encysted empyema, and pulmonary tuberculosis, and had been treated ineffectively for several years. Two cysts were detected by chance on serial x-ray examinations. Despite the small number of patients, the great variety of the clinical manifestations of pulmonary cysts was again demonstrated. Genuine pulmonary cysts are congenital malformations, from which the acquired pseudocysts must be differentiated that may be either inflammatory, traumatic, parasitogenic, or neoplastic. There is no uniform clinical aspect of a pulmonary cyst, and, therefore, diagnosis occasionally may be difficult. An attempt should be made at extirpation of the cyst without sacrificing any portion of the healthy lung tissue, but occasionally more extensive resection may be required.

Internal Mammary Artery Implant in the Treatment of Angina Pectoris: A Three Year Follow-Up. A. Vineberg. Canad. M. A. J. **70**:367-378 (April) 1954.

In experiments made by Vineberg on dogs, the left internal mammary artery was freed from the chest wall, the distal end was doubly ligated and cut between the ligatures, and the freed portion of the artery was buried in a tunnel made in the anterior wall of the left ventricle. Two types of implants were studied —one in which the internal mammary artery was buried within the myocardium with its end open, and the other with it closed but with an attached open, bleeding intercostal branch. An anastomosis occurred in the first type of implant into the myocardial tunnel between the artery and the left coronary arterioles within five days. With the second type of implant, i. e., when the internal mammary artery was buried with its end closed, but with an open sixth intercostal artery, anastomosis was produced after 12 days. At the end of three to four weeks well-formed arterioles were found that joined with arterioles lying in the left ventricular myocardium. The new branches joined not only with the coronary arterioles, but occasionally with the coronary veins. The functional value of the anastomotic channels between the extracardiac arterial sources and the coronary circulation was tested in survival experiments following ligation of the anterior descending branch of the left coronary artery, by determination of the direction of blood flow in the internal mammary artery, and by experimental production of myocardial ischemia and its treatment by internal mammary implantation. Results showed that the implant is capable of sustaining life in the dogs, of preventing infarction when the anterior descending branch of the left coronary artery is occluded, and of revascularizing the myocardium in a high percentage of animals. The internal mammary artery implant procedure was used in the past three years in the treatment of 12 men between the ages of 36 and 57 with coronary artery insufficiency. Nine of the 12 patients were without anginal pain at rest, while the remaining 3 experienced anginal pain at rest. All patients were unable to work at the time of the operation. Their periods of disability varied from 7 to 36 months. Of the 12 patients, 10 had one or more proved myocardial infarctions. The three patients with status anginosus died within 62 hours after the surgical intervention. The nine patients without anginal pain at rest survived the operation and were followed up for 2 to 34 months. Seven of them are working. Three have slight pain on severe exertion, one has severe pain, and five are completely free of pain. One patient has had coronary occlusion without infarction since the operation and has returned to work. Surgical intervention should be encouraged in partially or totally disabled patients without anginal pain at rest, while patients with anginal pain at rest (status anginosus) should not be submitted to cardiac surgery.

Sympathectomy in the Treatment of Benign and Malignant Hypertension: Review of 76 Patients. C. J. Longland and W. E. Gibb. Brit. J. Surg. **41**:382-392 (Jan.) 1954.

Sympathectomy to modify malignant hypertension must be applied early. Longland and Gibb present observations on 76 patients with arterial hypertension who were treated by sympathectomy between 1937 and 1948. The authors differentiated benign and malignant groups on the basis of fundoscopic findings. A system of renal grading was found to have a correlated prognostic value. A small group of patients with retinal or papillary edema was separated from the malignant group as an "intermediate group" that promises a relatively good prognosis. Care was taken to ensure a thorough clearance of all visible

sympathetic nervous tissue in the region denervated. Most of the operations were done by one surgeon, but various types were employed such as (1) the Adson procedure, with bilateral infradiaphragmatic section of the splanchnic nerves and of the lumbar sympathetic trunk from approximately the 12th thoracic to the 3rd lumbar vertebrae, (2) bilateral transpleural resection of the splanchnic nerves and of the thoracic sympathetic trunk from approximately the 6th to the 12th thoracic vertebrae, (3) thoracolumbar sympathectomy with bilateral supradiaphragmatic and infradiaphragmatic section of the splanchnic nerves and of the sympathetic trunk from approximately the 9th thoracic to the 3rd lumbar vertebrae, and (4) miscellaneous procedures. Significant falls of blood pressure were found in 71% of patients on discharge from hospital; but this percentage had fallen to 20 three years after operation. Survival was probably slightly prolonged in the malignant group; symptoms were alleviated in 80%. There is some evidence that thoracolumbar sympathectomy was more efficacious than lesser procedures. While these results do not put sympathectomy in a favorable light, the authors feel that the operation may be undertaken for relief of intractable symptoms and to give patients with very high pressure a period of relief.

Resection of an Aortic Coarctation in a 2 Week Old Infant. I. D. Baronofsky and P. Adams Jr. Ann. Surg. **139:**494-496 (April) 1954.

Thoracotomy was carried out through the fourth left interspace in a 2-week-old baby boy with coarctation of the aorta causing diffuse, massive cardiomegaly and edema of the hands and feet. As the mediastinal pleura was opened, it became evident that a coarctation was present immediately distal to the left subclavian artery. On further dissection, a patent ductus arteriosus was discovered. The ductus appeared to enter the aorta distal to the coarctation. The ductus was dissected free and clamps applied on the aorta proximal and distal to the coarctation, as well as the pulmonary artery side of the ductus arteriosus. Immediately on completion of these maneuvers, the heart size decreased remarkably under direct vision. The lungs were inflated periodically during the rest of the maneuvers. The ductus was closed by over-sewing and then stick-tying the base. The aorta was transected at the coarcted area that was resected and an end-to-end anastomosis then accomplished. A whipping type of suture was used, interrupted at three points in the circumference. On removal of the clamps, an excellent flow of blood was obtained. The aorta was then replaced within the pleural cavity and the chest closed with catheter drainage. The infant tolerated the procedure very well. Postoperatively his convalescence was entirely uneventful. A chest film revealed that the heart was almost normal in size. It is suggested that, in the small group of babies less than 1 year of age who have an aortic block and uncontrollable cardiac embarrassment, resection of the block and end-to-end anastomosis of the aorta should be performed.

Delayed Death Following Disk Surgery. C. E. Kern. Texas J. Med. **50:**158-160 (March) 1954.

The 41-year-old man described had a herniated nucleus pulposus that was surgically removed. One year after the operation, the man slipped on ice, and there was a sudden recurrence of the low back and left sciatic pain. At a second operation there were found small fragments of cartilage beneath the fifth lumbar nerve root at the fourth lumbar interspace on the left side, and they were removed. Orthopedists then performed fusion. Screws were placed bilaterally through the facettes joining the fifth lumbar vertebra and the sacrum and through those joining the fourth and fifth lumbar vertebrae. Bone was taken from the iliac crest and a fusion was accomplished. Eleven days later, elevation of temperature occurred, and it was noted that the upper end of the wound was fluctuant. This area was aspirated, serosanguinous fluid was obtained, and Micrococcus (Staphylococcus) aureus was cultured from it. Open drainage and antibiotic therapy were instituted, and the wound healed. The patient was readmitted 30 months later with osteomyelitis, epidural abscess, and fatal fulminating meningitis. It is suggested that the operation was directly responsible for this sequence of events. The question is raised as to the wisdom of using metallic means of fixation in fusions of this type.

The Treatment of Vascular and Pigmented Nevi in Infancy and Childhood. F. Masters, N. Georgiade, C. Horton and K. Pickrell. North Carolina M. J. **15:**75-81 (Feb.) 1954.

The treatment of the vascular and pigmented nevus of childhood has been complicated by the number of methods currently in use. Too often a particular method of therapy may be used without careful consideration of its contraindications, and the results may be disastrous. Irradiation therapy for vascular nevi should never be used around the orbit, over epiphyseal lines and tooth buds, or near the testicles and ovaries. Sclerosing solutions should not be used in an extensive tumor, because of the danger of reaction and slough. Since it is impossible to distinguish clinically between the benign and malignant moles, any pigmented nevus that occurs in an area of chronic irritation or shows evidence of change should be removed surgically and a careful pathological examination performed. The authors feel that surgical excision and plastic repair is the treatment of choice in both vascular and pigmented nevi.

NEUROLOGY & PSYCHIATRY

Temporal Lobe Epilepsy. W. Penfield. Brit. J. Surg. **41:**337-343 (Jan.) 1954.

Complete destruction or removal of areas of brain does not cause epilepsy, but an incomplete lesion of grey matter may become epileptogenic. Acute attacks may occur at the time of brain injury, but chronic, recurring seizures make their appearance only after a lapse of time. It is the abnormal, the partially destroyed area of grey matter that may cause regional hyperirritability. A slowly growing neoplasm may compress the cortex for years before seizures result. The origin of these attacks is then found in the cortex near the tumor where circulation has been reduced. A brain wound begins to produce seizures months or years after the accident. The focus is found to be in the narrow atrophic gyri between scar and normal cortex. Partially destructive cerebral anoxemia of brief duration, such as may occur during birth compression, may leave scattered areas of permanent abnormality, such as partly atrophied gyri. The pressure of growth on the part of normal neighboring convolutions may crowd the atrophied gyri together. Shrivelled gyri may remain dormant for long periods (5, 10, or even 20 years) before they ripen into epileptogenic foci. The author, together with others, studied material obtained in the course of subtotal temporal lobectomy in 157 cases. A few of these patients had indolent tumors, scars of brain abscesses or brain injuries, or vascular abnormalities, but 100 of 157, nearly two-thirds, had localized areas of cortical atrophy, presumably the result of birth compression. This cause was deduced from the history, the radiological, electroencephalographic, and operative findings, as well as from pathological study. Medical treatment should always be tried first in these patients, but, when they do not respond and when the temporal lesion is unilateral, partial temporal lobectomy offers a 50% chance of cure and a 25% promise of improvement with comparatively little risk of life. If the neurosurgeon is to succeed, he must learn to localize the epileptogenic lesion before operation. He must find a true abnormality of grey matter. During ablation he must respect the circulation and the integrity of the convolutions that are left behind. The author believes that the relief of focal cerebral seizures will some day constitute the most important therapeutic field in the surgery of the nervous system.

Surgical Treatment of Syringomyelia. N. Wetzel and L. Davis. A. M. A. Arch. Surg. **68:**570-573 (April) 1954.

Wetzel and Davis report observations on 28 patients with syringomyelia in whom myelotomy was performed. The term syringomyelia describes the formation of a cavity in the spinal cord that may be due to imperfect closure of the neural tube, with the persistence of embryonic cell rests that in the adult

undergo multiplication, degeneration, and liquefaction. Two processes are essential features: the glial proliferation, which may be primary, and the tendency toward cavity formation, which may be secondary. The cell concerned is probably benign and slow-growing. The symptoms are characteristic of the location of a lesion near the central canal of the cord. They include disturbance of pain and temperature sensation, the fibers of which cross near the central canal, and of motor function due to local anterior horn destruction. Autonomic disturbances may also be produced. The diagnosis may be made on the basis of motor weakness, usually of the upper extremity, with an associated sensory loss, i. e., loss of temperature and pain with preservation of other modalities, with varying trophic disturbances. The disease was observed first in middle life in most of the 28 patients, only 5 being less than 30 and 5 over 50 years of age. Men predominated in the ratio of 3:1. Weakness in an extremity, mostly an upper one, was the most frequent complaint. Other complaints were of pain in the neck, syncopal attacks, dysarthria, urinary incontinence, and visual hallucinations. Symptoms had been present for up to 20 years. Physical examination revealed sensory disturbances in all patients. Changes due to the involvement of the spinal tract of the trigeminal nerve were seen in 13. Involvement of cranial nerves other than the fifth or accompanying it were noted in 11. Three patients had bowel or bladder dysfunction. The spinal cord lesion was in the cervicomedullary region in all patients except one. A laminectomy was performed in all. Changes in the arachnoid were noted in 16, and this varied from slight adherence to the dura to a marked clouding or thickening. The cord generally appeared swollen. The size of the syrinx varied. There was one postoperative death, and another patient died as the skin incision was made. Postoperative complications, mostly in the form of badly healing wounds, occurred in several patients. The authors feel that all patients with syringomyelia should be given the benefit of a myelotomy and drainage of the syrinx, since, in the 24 patients followed for more than a year, the disease was either arrested or improved in 17, and in only 7 did the operation fail to prevent the further loss of spinal cord function. The natural history of syringomyelia is one of inevitable progression, although periods of remission are known to occur.

Polioencephalitis Illustrated by 104 Cases from 1952 Poliomyelitis Epidemic in Copenhagen. E. Skinhøj. Nord. med. **51**:337-340 (March 4) 1954. (In Norwegian.)

Polioencephalitis is an encephalitis of the brain stem that preeminently affects the motor nuclei, substantia reticularis and special parts of it, and nucleus ambiguus and cerebellum; in rarer cases it continues to the extrapyramidal nuclei of mesencephalon and to the hypothalamus. In the cases studied, the most constant encephalitis symptom was impairment of consciousness, from slight torpidity to total unconsciousness. There was hypotonia, in some cases simulating paresis, especially the characteristic paresis of the neck, not specific for polioencephalitis. Disturbances in movements of the eye were frequent and disturbances of coordination were relatively rare. Bradykinesia was sometimes evident. In severe cases, deglutition and respiration were affected. In the 62 cases of pure polioencephalitis, six deaths occurred. Of the 42 cases with deglutition and respiration insufficiency, oftenest also shock, 15 were fatal. The sex incidence was remarkable, with masculine preponderance of 5:1. The prognosis for life in uncomplicated cases is good; it is aggravated if respiration and deglutition are affected and extremely unfavorable if the vasomotor centers are involved. Apart from cases with paresis of the cranial nerves, the prognosis for restitution is good. Differential diagnosis between polioencephalitis and other acute encephalites can be made with fair certainty, as an acute meningoencephalitis localized to the brain stem, possibly accompanied by nuclear paresis and without afferent symptoms, pyramidal tract symptoms, or pupillary changes, can seldom be other than poliomyelitis.

Accident Proneness. M. S. Schulzinger. Indust. Med. **23**:151-152 (April) 1954.

The belief that a small percentage of the population is involved in most of the accidents has led to a great amount of misdirected effort. It is being taught in schools and preached over the air and in the press that 15% of the population is responsible for 85% of all accidents and that all we need to do to solve the accident problem is to detect and cure this small group of people. The question arises whether this "15% of the population that suffers 85% of all the accidents" is a fixed group of accident-prone persons. Schulzinger's clinical experience and studies do not support this view. He analyzed a consecutive series of 35,000 accident cases, studied in private practice over a period of 20 years under his personal care. These consisted of 27,000 industrial accidents and 8,000 nonindustrial accidents. The industrial accidents included patients from a large number and variety of small and medium-sized commercial and industrial establishments. The nonindustrial accidents included many family groups and patients from all social and economic levels. Both sexes and all age groups were represented, and the series included all types of accidents and both major and minor injuries. These studies indicated several things. 1. The tendency to have accidents is, in the main, a phenomenon that passes with age, decreasing steadily after reaching a peak at the age of 21. The accident rate at the age of 20 to 24, in both the industrial and nonindustrial series, is two and a half times higher than at the age of 40 to 44, four times higher than at the age of 50 to 54, and nine times higher than at the age of 60 to 64. 2. Seventy per cent of the nonindustrial accidents occurred before the age of 35, and nearly 50% before the age of 25. 3. Men are more liable to accidents than women, the ratio of men to women being 2:1 in the nonindustrial series and apparently even higher in the industrial series. 4. Most accidents (74%) are solitary experiences of large numbers of persons. These figures were identical for the industrial and for the nonindustrial series and remained constant for nearly every year of a 20 year period. 5. Those who suffer injuries year after year, over a period of three years (3 to 5%), account for a relatively small percentage of all the accidents (0.5%). 6. Irresponsible and maladjusted persons are significantly more liable to accidents than responsible and normally adjusted persons. The evidence indicates that, if the period of observation is sufficiently long, the small group of persons who are responsible for most of the accidents is essentially a shifting group with new persons constantly falling in and out of the group.

Hypopituitarism and Some Disturbances of Consciousness Associated with It. J. E. Caughey. Australasian Ann. Med. **3**:26-36 (Feb.) 1954.

Twelve patients with hypopituitarism are described, 6 women with postpartum necrosis of the pituitary gland and 6 men with tumors in or around the pituitary fossa. All of them had disturbances of consciousness. Hypopituitary coma occurred in 11 at some time; it varied in intensity from semicoma and confusion to deep coma. Usually some form of stress, such as infection, injury, surgery, anesthesia, hypnosis, hypoglycemia, exposure to cold, or low oxygen tension, produced the coma, but it also came on gradually, without an obvious precipitating factor. Eleven of the patients complained of hypersomnia. Patients with hypopituitarism are also unduly susceptible to attacks of hypoglycemia with coma, which may be precipitated by very small doses of insulin. Hypopituitarism should be considered in the differential diagnosis of obscure coma. In the management of patients with hypopituitarism, it is important to avoid the stresses mentioned. In the presence of unavoidable surgery or infection, these patients should be protected by cortisone. Hypopituitarism can be successfully treated by substitution with thyroid substance, testosterone implantations, and sodium chloride. Desoxycorticosterone may be given. Hypopituitary coma may be successfully treated with cortisone or corticotropin and subsequent implantations of testosterone and administration of thyroid substance.

GYNECOLOGY & OBSTETRICS

Postpartum Pituitary Necrosis. W. J. Zimmerman, P. E. Sutton and A. Boyajian. J. Michigan M. Soc. **53**:164-166 (Feb.) 1954.

The authors point out that, although the symptoms of postpartum pituitary necrosis are easily recognizable, the condition is often overlooked because of its infrequency. Patients with Sheehan's syndrome are often treated for hypothyroidism, hypo-ovarianism, Addison's disease, or functional hypoglycemia. The clinical picture is characterized by peripheral vascular collapse at the time of delivery and, subsequently, failure of lactation, failure of regrowth of pubic hair, loss of axillary hair, loss of libido, atrophy of the breasts, weakness and malaise, loss of appetite, and intolerance to cold. There may be a long latent period between delivery and the onset of symptoms; this is another factor that renders diagnosis confusing. Sheehan's syndrome can be differentiated from functional asthenia and psychoneurosis by the presence or lack of secondary sexual characteristics and the status of the laboratory findings. Anorexia nervosa can be differentiated by the fact that it occurs more commonly in unmarried women, positive evidence of psychopathology will be found, axillary and pubic hair are retained, and marked emaciation is always present, whereas in postpartum pituitary necrosis it is rare. The best treatment of pituitary insufficiency at present is corticotropin (cortisone is given if the patient does not respond to corticotropin), thyroid replacement, estrogen therapy for hypo-ovarian symptoms, and testosterone for its protein anabolic effect.

Practical Use of Ergot Preparations in Obstetrics. D. Trolle and F. Fuchs. Nord. med. **51**:329-331 (March 4) 1954. (In Danish.)

Pronounced bleeding in incomplete or complete abortion can usually be checked by 1 ml. of methylergonovine (Methergine) or 1 ml. of ergonovine intramuscularly or intravenously. Evacuation of the uterus, both as induced abortion and as the concluding intervention in spontaneous or criminal abortion, is facilitated by the use of these agents, and the danger of perforation and bleeding is lessened. In case of dead fetus, both term and premature, 1 ml. of partergine and 1 ml. of dihydroergotamine have given good results. Dihydroergotamine may be indicated in prolonged labor due to spastic orifice; for the present it is advised that dihydroergotamine be applied only in special departments, only in the dose of 0.2 ml. intramuscularly and not repeated. Methylergonovine treatment in the third stage of labor is to date the most powerful prophylactic and therapeutic agent to reduce the loss of blood. Methylergonovine is also important therapeutically in postpartum atony of the uterus, and it can be used with ergonovine in retarded involution of the uterus in the puerperium.

PEDIATRICS

Intelligence Quotients of Children Recovered from Erythroblastosis Fetalis Since the Introduction of Exchange Transfusion. R. Day and M. S. Haines. Pediatrics **13**:333-338 (April) 1954.

A second group of 68 erythroblastotic infants and their unaffected siblings is added to that previously published. These infants had the disease in the years 1947-1951. Those thought to be severely ill (41) were treated with a single replacement transfusion. The others (27) were given small transfusions or no treatment. In contrast with the children treated prior to 1947 whose mean intelligence quotient (Stanford-Binet) was 11.8 lower than that of their unaffected siblings, the present group had a depression in intelligence quotient of only –6.13 ($p=0.01$). The seeming improvement was probably not occasioned by the inclusion of mild cases that would have been missed in earlier years, since exclusion of mild cases to the extent of half the series leaves the remainder with less of a depression in intelligence quotient than was found in the earlier study. It is tempting to suppose that replacement transfusion protected the central nervous system, but statistical analysis shows that the improvement in outcome has a probability value of only 0.07; that is, there is one chance in 14 that the apparent improvement is not real. The degree of jaundice was found to be significantly related to the depression in intelligence quotient. Analysis of the degree of anemia yielded equivocal results. The 11 children who were rated severely ill by both criteria of severe jaundice and severe anemia had an intelligence quotient that averaged 23.1 points below that of their siblings. Arthur and Merrill-Palmer total scores and hearing tests disclosed no deficiencies.

Obstructive Jaundice in Infants with Normal Biliary Tree. R. C. Harris, D. H. Andersen and R. L. Day. Pediatrics **13**:293-307 (April) 1954.

This paper describes the authors' findings in 50 infants with biliary obstruction not caused by congenital defect of the bile ducts. Sixteen had preceding hemolytic disease from ABO or Rh incompatibility, and three had acquired hemolytic anemia. One infant had probable serum hepatitis and 30 others had hepatitis of unknown cause. All had a patent external biliary tract. Clinically these patients had jaundice, light stools, and dark urine. All appeared in a good state of nutrition except those with hepatitis of unknown cause. The results of laboratory studies included a high direct serum bilirubin, usually negative cephalin flocculation, frequently elevated zinc sulfate turbidity, and low cholesterol esters. The urine urobilin may be absent or increased in amount. Histological studies of liver showed the presence of multinucleated giant liver cells, much myelopoiesis and erythropoiesis, plugging of bile canaliculi, and mild bile duct proliferation. Large amounts of yellow pigment were found in the liver cells, but this pigment did not take the usual iron stains. Livers from patients with hepatitis of unknown cause showed more evidence of inflammation, cell necrosis, and portal fibrosis than the others. Pertinent laboratory studies that help differentiate such cases from biliary atresia include determinations of serum bilirubin, zinc sulfate turbidity, cholesterol and cholesterol esters, and urine urobilin. Studies of maternal and infant blood factors and a search for evidence of agglutination and increased production of erythrocytes are also important. Tests not useful in differentiation are determinations of cholesterol esterase, alkaline phosphatase, and prothrombin time. If diagnosis is impossible from clinical and laboratory information, exploration of the biliary tract with liver biopsy and iodopyracet (Diodrast) cholangiography may be necessary. This procedure should be delayed until an adequate period of observation has elapsed and until the infant is over 4 months of age. Such a delay may result in spontaneous clearing of the jaundice with complete recovery.

Tuberculosis in Young Children, with Particular Consideration of Its Prognosis and Therapy. L. Weingärtner. Ztschr. Tuberk. **104**:27-41 (No. 1-3) 1954. (In German.)

Of 737 children up to 4 years of age with tuberculosis studied by the author between 1944 and 1952, 132 were suckling infants. Tuberculosis in the course of the first years of life is exclusively one of the primary stage, i. e., the period from the development of a primary complex with the various possibilities of reaction between organism and focus to the inactivity of the latter. Most of the primary infections occurred in the lungs. Primary intestinal tuberculosis was observed in 25 patients (3%), and there was a similar incidence of tuberculosis of the lymph nodes. Of these 737 patients, 119 died, and in 113 autopsies were performed that revealed breaking down of lymph nodes in 29 (26%) and perforation of lymph nodes into the bronchial tree in 16 (14%). The prognosis of such a perforation is not always unfavorable, but recovery may require considerable time. Hematogenous dissemination occurred in 220 patients and resulted in death in 186. The new antituberculous drugs proved to be beneficial in these malignant types. Of 175 patients treated with streptomycin, *p*-acetylaminobenzaldehyde thiosemicarbazone (amithiozone), isoniazid, and *p*-aminosalicylic acid (each of these drugs given either separately or in combination), highly satisfactory results were obtained in 83, good results in 28, and questionable results in 17. Therapy failed in 47. Of 125 patients treated with streptomycin alone or in combina-

tion with the other drugs, highly satisfactory results were obtained in 76 (60%), including those with miliary tuberculosis and tuberculous meningitis. Of 72 patients with tuberculous meningitis, 29 (40%) survived. Therapy should be started early when the tuberculous process is still in the stage of unspecific inflammation. Healing with scar formation results when treatment is instituted during the productive stage with epitheloid giant cells. In tuberculous meningitis intrathecal administration of streptomycin is required for at least six months, while intramuscular administration of the antibiotic may be discontinued between the forth and fifth month provided that miliary tuberculosis has not been demonstrated. The maximum daily dose for intrathecal administration of streptomycin should be 60 mg., and the dosage should be decreased gradually by administering the drug only every second or third day, thus preventing impairment of the auditory nerve. For the same reason, dihydrostreptomycin should not be given by intrathecal route. Streptomycin therapy is indicated in all forms of tuberculosis in suckling infants because of the tendency to exacerbations. Streptomycin slows the course of the tuberculous inflammation and prevents exudation, but streptomycin does not have any effect on large caseous lymph nodes. Except for suckling infants, streptomycin and other antibiotics should not be used in the treatment of simple primary complex and of tuberculosis of bronchial lymph nodes, but should be used to treat severe complications, particularly intestinal and peritoneal tuberculosis and as an adjunct to surgical treatment of bone and joint tuberculosis and tuberculosis of cervical lymph nodes. Amithiozone in doses of 2 mg. per kilogram of body weight may be of value in treatment of tuberculosis of mucous membranes, recent exudative processes, and specific fistulas. *p*-Aminosalicylic acid alone was disappointing because of its poor tolerance and its often doubtful effect. Isoniazid is the drug of choice for combined therapy because of its negligible side-effects and its otherwise favorable action. The high mortality rate among young children despite the obtained favorable results justifies attempts at improvement by their early removal from contact with adults with open tuberculosis and by BCG vaccination of newborn infants.

Local Treatment with Thorium X for Tuberculosis of Cervical Lymph Nodes in Children. H. Ritter and P. Dannenbaum. Medizinische **No. 14:**459-463 (April 3) 1954. (In German.)

Thorium X, a radioactive element of the thorium disintegration series, is an isotope of radium and has a half-value period of 3.64 days. Its relatively rapid disintegration warrants a limited duration of its irradiation action and, therefore, justifies its use in children. Twenty-eight children with tuberculosis of the cervical lymph nodes were given local treatment with thorium X, a solution of which in distilled water was injected into the cavity of the tuberculous abscess. The single dose of thorium X used was 250 electrostatic units, and even a smaller dose of 125 electrostatic units was used in exceptional cases in which several cervical lymph nodes were to be treated simultaneously. Only the first patient was treated with much larger doses; 1,000 electrostatic units of thorium X lac was applied three times and 2,000 electrostatic units of thorium X ointment was applied once to a large perforating ulcer, but the authors soon became convinced that single doses of 250 electrostatic units are large enuogh to obtain a cure. Within an average of four and a half months, complete recovery resulted in 27 children after two to seven applications of thorium X in 21. One child required only a single application; four children who were severely ill required more than 10 applications; and one with tuberculosis of bilateral cervical lymph nodes received 31 applications. Intervals between the repeated applications varied from three to seven days. The total average dose of thorium X varied from 1,000 to 1,500 electrostatic units and in single cases from 250 to 5,000 electrostatic units. One child who was treated for seven months received a total dose of 2,125 electrostatic units. In only one child was therapy a failure. The cosmetic end result was satisfactory in most of the children. The treatment is simple and inexpensive. Of the 28 children, 20 were treated at the hospital and 8 were ambulatory, but the authors believe that all of them could have been treated ambulatorily. The children were followed up for one and a half to four years after recovery. Recurrences were observed in four children (15%). Side-effects of thorium X were not observed. Local application of thorium X not only provides desirable concentration of the isotope in the focus, but it also prevents passing of more than fractions of the thorium X into the blood vessels and to the organs that are most sensitive to irradiation damage such as the liver, gonads, bone marrow, and spleen. The growth of the children was apparently undisturbed by the treatment. Thorium X therapy in tuberculosis of cervical lymph nodes represents a progress because its duration is the shortest of all the conservative methods. Incidence of recurrences and cosmetic results are the same as with surgical treatment.

Female Pseudohermaphroditism: Response to Cortisone Therapy. R. Vines and L. Dods. Australasian Ann. Med. **3:**5-17 (Feb.) 1954.

Six female patients, ranging from a few days to 16 years old, were treated with cortisone for pseudohermaphroditism due to congenital adrenocortical hyperplasia. The degree of associated hypoadrenocorticism present was variable. Oral administration of cortisone was used for both initiation and maintenance of treatment in five of these patients with satisfactory results, but it is suggested that the parenteral route is preferable during the initial stage of treatment. Depression of 17-ketosteroid excretion and loss of virilism or failure of it to appear were observed in each case. Other changes occurring in some of the patients were breast development, diminution of acne and general improvement in complexion, feminization of contours and increased hip measurement, diminution in growth of limb and body hair, appearance of the menarche with apparently ovulatory menses, and improvement in personality. Although cortisone suppresses adrenal androgen production, it would appear that abnormal production of other adrenocortical hormones continues, for, in doses sufficient to suppress androgen production, cortisone causes little reduction in the symptoms of hypoadrenocorticism that are sometimes present. That these symptoms are the result of the production of abnormal hormones or of hormones in abnormal quantities is suggested by the necessity that sometimes arises for giving larger doses of salt and desoxycortisone than might be expected to be necessary if the adrenal cortices were absent.

DERMATOLOGY

Removal of Pitted Acne Scars and Other Skin Defects by Surgical Planing. J. J. Eller. New York J. Med. **54:**1166-1169 (April 15) 1954.

For several years Eller has been correcting pitted acne scars, smallpox scars, and scars caused by trauma by means of surgical abrasion with rotary stainless steel wire brushes with excellent cosmetic results. Before the planing, an ice pack containing 5% propylene glycol in water, which has been chilled previously in a refrigerator, is placed over the area to be treated for about 20 minutes. The skin is cleansed with alcohol, and areas are demarcated. The scalp is draped, the eyelids are covered with a petroleum ointment, cotton plugs are used to close the ear and nasal orifices. Ethyl chloride is sprayed on the areas of the face to be treated. Simultaneously, a current of air is directed on the surface to accelerate the evaporation. The ethyl chloride acts as a local anesthetic and also solidifies the skin. The revolving brush is placed against the skin horizontal to the area and is then moved slowly up and down causing an abrasion of the scarred area. If bleeding occurs before the abrasion is completed, the abrasive brush is stopped and ethyl chloride is reapplied until the bleeding stops and the skin becomes rigid once more. After the operation there usually is moderate bleeding. Dry sterile gauze is applied with slight pressure for about 20 minutes. The treated areas are then dressed with a sterile petrolatum dressing covered by gauze, and this is changed daily. Usually one abrasive planing is sufficient to produce an excellent result. This procedure may be repeated in six weeks or months later if necessary. The author,

who has been treating scars for over 20 years, feels that the use of rotary wire brushes is the most efficient method insuring excellent cosmetic result.

Treatment of Chronic Discoid Lupus Erythematosus with Atabrine. C. B. Kennedy, V. M. Henington, W. H. Garvin and C. Bahcall. J. Louisiana M. Soc. **106**:89-92 (March) 1954.

Kennedy and associates present observations on 27 patients with lupus erythematosus treated with quinacrine (Atabrine) hydrochloride. Twelve of 18 patients with the chronic discoid variety without much scarring responded favorably; their lesions greatly decreased in number, the papular lesions flattened out, and erythema disappeared, leaving a flat, lightly pigmented area. This was true in spite of the fact that no special effort was made to protect them from the sun. Ten of the 12 are still receiving the drug. None of them objected to the yellow color of the skin. Improvement seems to be directly proportional to the depth of skin staining. Four of the 18 patients relapsed while still receiving quinacrine, and these must be classified as failures. Two of the 18 patients relapsed within five days after therapy was discontinued, and retreatment was not as successful as the first course of therapy. There were six cases in which heavy, thick, hyperkeratotic scarring was the predominant feature of the disease. In two of these there were new erythematous lesions present that disappeared with quinacrine therapy. The other four cases showed little response. In one of two patients with chronic disseminated lupus erythematosus with subacute flare-ups, the result of quinacrine therapy was good, and in the other there was not much improvement. One patient with the Senear-Usher form of the disease had reached a static condition with cortisone and corticotropin therapy, but quinacrine brought about further improvement. Advantages of quinacrine therapy are that it can be given without the necessity of too frequent observation of the patient, that it is economical, and that it is safe to use.

UROLOGY

The Experimental Aspects of Industrial Bladder Cancer. G. M. Bonser, D. B. Clayson, J. W. Jull and L. N. Pyrah. Brit. J. Urol. **26**:49-52 (March) 1954.

The high incidence of bladder cancer among men engaged in the manufacture of aniline dyes was recognized as early as 1895. Since then 1-naphthylamine, 2-naphthylamine, and benzidine have been shown to be carcinogenic. It was demonstrated that 2-naphthylamine, a common dyestuff intermediate, induced bladder cancer in dogs when it was fed by mouth over several years, but it seemed unlikely that 2-naphthylamine itself was directly carcinogenic, since it does not cause skin tumors. Experiments were designed to determine (1) the effective agent in 2-naphthylamine carcinogenesis and (2) the reason for the selective action on the bladder. A 15% suspension of the chemical to be tested was made in paraffin wax, and from this pellets of about 15 mg. by weight were formed. These pellets were implanted into the bladder lumen of mice. The suspected carcinogen 2-amino-1-naphthol hydrochloride was thus brought into direct contact with the bladder epithelium, and its diffusion over a period of months simulated what might be expected to occur when the parent amine was fed. In control experiments, pellets containing 2-naphthylamine or only wax were used. By this method evidence was obtained that a synthesized specimen of 2-amino-1-naphthol hydrochloride induced cancer of the bladder, whereas 2-naphthylamine or wax caused no tumors. Two known carcinogens, 3: 4: 5: 6-dibenzacarbazole and 20-methyl-cholanthrene, also induced tumors under these conditions. This was the first reliable demonstration of carcinogenic activity in a hydroxylated amine and the first demonstration that the metabolism of an inert compound could produce a carcinogenic substance. Quantitative excretion studies showed that in dogs 2-amino-1-naphthol, when conjugated with sulfuric acid, is rapidly excreted in the urine, the ratio of urine to blood concentrations being 200:1. The exposure of the urinary tract to the potential carcinogen is thus much greater than that of any other tissue, and this may be the reason for the localization of tumors. Further work will be needed to determine why cancer occurs in the bladder when the entire urinary tract is exposed. The retention of urine in the bladder may be an important factor.

Renal Cell Carcinoma. J. R. Ball and R. A. Garrett. J. Indiana M. A. **47**:363-366 (April) 1954.

Ball and Garrett believe that the term hypernephroma for carcinoma of the renal parenchyma will probably be retained, although few or perhaps no renal neoplasms are truly derived from adrenal rests as this term indicates. These tumors are thought to come from cells of the renal tubules. This report is based on an analysis of 44 cases of renal cell carcinoma, of which 17 were operable. Of these 17 patients, 4 survived 10 years or longer. Renal cell carcinoma appears as a well-encapsulated yellowish solid mass in the renal parenchyma. It may assume prodigious proportions, filling an entire upper and lower quadrant of the abdomen. Histologically the tumor mass may present two distinct pictures. The clear cell variety displays isometrically placed nuclei, the cells arranging themselves in cords and strands with coarse supporting trabeculae. The granular cell type is characterized by eccentrically placed nuclei with sparsely supported tubules and papillary formations. The latter is thought to have the poorer prognosis. Both cell types may also occur in the same tumor. Metastases usually progress by way of the blood stream. The symptoms of hematuria, pain, and mass are the triad indicative of renal cell carcinoma. This triad was the presenting complex in over half of the patients. Hematuria was the presenting symptom in 60%, and was painless in all but one of the patients. The authors emphasize that the presence of hematuria is a challenge to rule out a malignant growth of the genitourinary tract. Urologic investigation is essential, unless the cause of hematuria can be established without it. Pain was not a common symptom in renal cell carcinoma. Surgical extirpation is the only curative treatment for this neoplasm. The authors use x-ray treatment only in the palliative control of metastatic pain. They feel that the thoracoabdominal, transabdominal approaches and the dorsolumbar incision offer the best access for the removal of the kidney. There was no surgical fatality in the 17 nephrectomies performed by the authors, but other reports indicate an operative mortality of 8.5%.

THERAPEUTICS

Treatment of Exanthematic Typhus with Tetracycline. F. Ruiz Sánchez, A. Ruiz Sánchez, A. Becerra and E. N. Granda. Antibiotics & Chemother. **4**:402-405 (April) 1954.

Ruiz Sánchez and associates of the University of Guadalajara, Jalisco, Mexico, say that they and others since 1948 have obtained very favorable results with chlortetracycline (Aureomycin) in the treatment of exanthematic typhus. Today chlortetracycline is recognized as one of the most useful drugs in the treatment of typhus. Following the introduction of tetracycline—a new antibiotic prepared by removal of the chlorine atom from the chlortetracycline molecule—it seemed desirable to determine whether the modified drug retained activity against the rickettsiae. Up to the present time, six cases of exanthematic (classical) typhus have been treated by the authors with tetracycline in doses of from 50 to 70 mg. per kilogram of body weight per day with very good results. The temperature became normal within 36 to 84 hours of therapy. All other symptoms were reduced with similar rapidity. No signs of toxicity or intolerance were observed.

Influence of Local Injection of Total Extract of Anterior Hypophysis on Delayed Bone Consolidation. E. Jannelli, A. Mignogna and L. Frizzi. Gior. ital. chir. **10**:129-148 (Feb.) 1954. (In Italian.)

A study was made to evaluate the action of total extract of the anterior lobe of the hypophysis on the callus-forming process in fractures in which union is delayed. Ten patients with nonunited fractures of the upper and lower extremities were treated. The extract was lyophilized and injected transcutane-

ously into the center of the fracture in doses of 10 P. U. (Piccione units). To prevent the injected fluid from diffusing outside the center of the fracture, a Hagedorn syringe was used with the needle attached to it, and the injection was followed on the fluorescent screen. The number of injections and their spacing depended on the results of clinical and radiological control examinations. The dose for each injection was always 10 P. U. The therapy was well tolerated. It produced fever in one patient, and in the patients in whom fractures of the upper extremities were treated there was pain at the site of the injection and it radiated to the entire arm. The results were satisfactory in nine patients. Short time elapsed from the first injection to the onset of clinical and radiographic evidence of bone consolidation, and the bone-forming process evolved rapidly to definitive healing. The therapy had no effect in one patient who had a comminuted fracture of the shaft of the humerus with retention of foreign metallic bodies. The authors advance various hypotheses to explain the mechanism of action of this hormone on the callus-producing process in fractures in which consolidation is delayed. 1. The extract may have an irritating and nonspecific action in the center of the fracture and may stimulate the precipitation of calcium salts in the fibrous connective tissue interposed between the fragments of the fracture. 2. The good effects may be caused by the action of the somatotropic fraction of this hormone when it is injected locally. 3. The extract may promote phenomena of bone metaplasia in the fibrous connective tissue interposed between the fragments and thus exert a "stress" action on the center of the fracture.

Erythremia Treated with Beta-Naphthyl-Dichlorethylamine (Erysan). J. Piper. Nord. med. **51:**303-305 (Feb. 28) 1954. (In Danish.)

The results of treatment of erythremia with β-naphthyldichlorethylamine are so favorable that its continued use seems justified. In three patients with erythremia not previously treated, complete hematological remission was attained on oral administration of 400 to 600 mg. of the agent daily, with total dosage of 24, 18.6, and 18.8 gm. respectively. In the first case, the remission has continued two years. In the second case, there was recurrence after remission for a year and a half; a new series of treatments with total dosage of 12.4 gm. resulted in a new remission. In the third instance, remission has lasted some months. In all cases, leukopenia occurred within the first one or two weeks after the end of treatment. Examination of the sternal bone marrow showed that a marrow rich in cells had been transformed into normal marrow or a marrow low in cells. β-naphthyldichlorethylamine exerts an inhibiting action on bone marrow and lymphoid tissue. Overdosage brings the risk of deeper bone marrow injury, and frequent control of the hemoglobin percentage, thrombocytes, leukocytes, and differential count is necessary, with termination of the treatment before too low leukocyte values are reached. This is particularly important, as reduction in leukocytes can continue for up to four or five weeks and reduction in erythrocytes and hemoglobin percentage for several months after withdrawal of the treatment. Because of the difference in individual sensitivity, no fixed plan of dosage can be set up. The possibility of a carcinogenic effect of β-naphthyldichlorethylamine cannot be ignored, but no such cases are known to have occurred on clinical use.

Use and Abuse of Corticotropin (ACTH) and Cortisone in Allergic Conditions. L. Unger and A. Unger. Ann. Int. Med. **40:**721-728 (April) 1954.

Corticotropin (ACTH) and cortisone are apparently not curative, but they can be used to tide patients over the critical phases of various diseases, including certain allergic conditions. Every physician should not only know when and how to use them, but should also be aware of the serious untoward reactions (chiefly pharmacological) that sometimes follow their administration. Special caution is required in prescribing these hormones for patients with relative contraindications to their use, such as diabetes, hypertension, or infectious diseases, and they cannot even be considered (except perhaps for emergency use) in the presence of pulmonary tuberculosis, peptic ulcer, psychosis, or other established contraindications. Patients whose life is endangered by a severe allergic condition, however, should be hospitalized and given hormone therapy at once, preferably corticotropin by slow, continuous intravenous drip (20 units of corticotropin in a liter of 5% glucose in water, each liter to last about eight hours). Aminophylline should be added to the fluids if asthma is present. Immediate treatment of this kind was required by only eight patients in this series, but the results were excellent in all. One other patient, an asthmatic woman with severe facial herpes zoster accompanied by stupor, fever, and involvement of one eye, did amazingly well, and permanent damage to her eye was averted. Patients for whom emergency therapy is not indicated should first be given a full allergy survey and time-tested allergic treatment; if satisfactory improvement fails to result from the usual measures, corticotropin and cortisone may be tried, unless there are indications to the contrary. Hormone therapy is generally more effective in patients with respiratory conditions (bronchial asthma, hay fever, and perennial allergic rhinitis with or without associated polyps) than in those with various forms of dermatitis. The best results are obtained by giving the hormones in large doses until relief is secured and then by gradually reducing the dosage as improvement continues. Sudden cessation of treatment is usually followed by relapse; administration of the hormones should, therefore, be continued for a long period, but the maintenance doses should be as small as possible and the patients should be carefully watched for the appearance of untoward reactions. The use of corticotropin and cortisone to alleviate allergic symptoms sometimes makes it possible to carry out accurate skin tests in patients whose skin test reactions would otherwise be weak or negative. Definite allergic symptoms, varying from mild urticaria to profound shock or even death, occasionally follow the administration of corticotropin or cortisone; consequently, as in the case of penicillin sensitivity, the offending hormone should be withdrawn as soon as minor reactions are discovered. Corticotropin can usually be substituted for cortisone in such cases and vice versa.

Antibiotics and Hyaluronidase Combined in Aerosols in the Treatment of the Lesions of Pulmonary Tuberculosis: (20 Months' Experience). Warnery, G. Dumon, Brin and others. Rev. tuberc., Paris **18:**37-45 (No. 1-2) 1954. (In French.)

Excellent results were obtained by treating tuberculous patients with aerosols containing streptomycin, isoniazid, and *p*-aminosalicylic acid, alone or in various combinations, when a diffusion factor was added to the solution. Treatments were given for 20 minutes twice daily. Trials of the method have been under way in two different groups of patients since May, 1952, and, although a definitive judgment cannot yet be rendered, a substantial number have been apparently cured of their pulmonary lesions, without recurrences, for periods of 15 months. Many of the 68 patients in the first group, approximately three-fifths of whom had had the disease for a long time, had received almost every kind of medical treatment and some had been treated surgically with collapse therapy before the aerosols were tried. A majority (about four-fifths) of the 98 patients in the second group had illness of shorter duration and about half had never been treated with antibiotics. Use of the aerosols was followed by substantial local improvement in 100 of the 166 patients, in 26 of whom complete clearing of the radiological picture was secured. Only two deaths occurred in the entire series. Aerosols alone were used in treating some of the patients, while in others general antituberculous treatment was also given. The method now in use consists of a combination of isoniazid, given as an aerosol, and *p*-aminosalicylic acid, given intravenously, or 1 gm. of streptomycin daily, given intramuscularly with isoniazid both orally and as an aerosol. The general treatment is suspended at the end of one month, but the aerosols are continued for as long a period as necessary. An intense dyspnea with bronchorrhea, which gradually receded during a period of 10 days after discontinuance of the aerosol, was the only complication noted in some thousands of aerosol treatments.

BOOK REVIEWS

Practical Electrocardiography. By Henry J. L. Marriott, M.D., Associate Professor of Medicine, University of Maryland, Baltimore. Cloth. $5. Pp. 171, with 115 illustrations by Marcie Ethridge Perry. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1954.

The author points out in his preface that few books on electrocardiography are truly elementary and easy to read. He has tried to write a book that requires no previous knowledge of basic fundamentals of electrocardiography such as physics and mathematics. To a large extent he has succeeded. The general practitioner who is anxious to know something about the common, everyday cardiac conditions in which electrocardiographic abnormalities are noted will find this book quite helpful. A simple explanation of the electrocardiogram and the reason for taking the various leads is contained in the first chapter. Chapters on rate and rhythm and the various complexes in the electrocardiogram follow. The arrhythmias are well covered, and the illustrations are excellent. Myocardial infarction and coronary artery insufficiency are covered surprisingly well, considering that only 25 pages including the illustrations are allotted to this important subject. The illustrations throughout are clear and well chosen. A unique feature is an index to illustrative electrocardiograms as well as a general index.

Metabolism of Steroid Hormones. By Ralph I. Dorfman, Ph.D., Associate Director of Laboratories, Worcester Foundation for Experimental Biology, Shrewsbury, Mass., and Frank Ungar, Ph.D., Staff Member, Worcester Foundation for Experimental Biology. Cloth. $4. Pp. 170, with 53 illustrations. Burgess Publishing Company, 426-428 S. Sixth St., Minneapolis 15, 1953.

The physician is often plagued by his inability to follow discussions relative to the metabolism of the steroid hormones. Discussants glibly toss about terms such as 3α-ol-17-one, or other terminology dashed with the pregnane nucleus plus side chains of varying lengths, to the utter discomfiture of the uninitiated. The present text contains a clear indoctrination into the mystic realms of steroid structure, physiology, and metabolism, suitable for reading by physicians. The reader is wafted lucidly through steroid nomenclature and structure into the formerly bewildering maze of biosynthesis, microbiological reactions, and enzymatic influences with a sense of comfortable understanding not usual in biochemical textbooks. The book should be of value to the beginner as well as to the research worker in the field of endocrinology.

Traité de cytologie sanguine. Par Marcel Bessis. Cloth. Pp. 588, with 405 illustrations. Masson & Cie, 120 boulevard Saint-Germäin, Paris, 6e, 1954.

This is a complete revision of a book published in 1948 under the title "Cytologie sanguine, normale et pathologique." The text has been increased from 298 pages with 228 illustrations to 588 pages with 405 illustrations, and the whole treatment of the subject has been improved. In the first edition only occasional references were included; the present edition contains a large number of up-to-date and well-selected references. The author is a distinguished contributor to hematological literature. The purpose of the book is to review the subject of cytology of blood and marrow cells in the light of recent developments in phase microscopy, electromicroscopy, cytochemistry, ultracentrifugation, and the use of polarized, ultraviolet, and fluorescent light. Minute description of the appearance of each cell as prepared with classical staining methods precedes the discussion of observations noted with the new techniques. The material is treated in 15 chapters divided in three main parts. The first part, on techniques, includes chapters on obtaining material, counting, vital staining, study of smears, electronic microscopy, and experimental methods, such as tissue culture, electrophoresis, separation of cells and cellular components by centrifugation, photomicrography, autoradiography, and phase microscopy. The second part, on general physiology and pathology of blood cells, covers hematopoiesis, qualitative data on marrow and blood cells, and general data on pathological changes. The third part deals with details of special pathology of the different marrow and blood cells, each in a separate chapter: erythrocytes, granulocytes, thrombocytes, lymphocytes, histiocytes (including monocytes), stem cells, and rare cells seen occasionally in blood smears and marrow preparations. The presentation is lucid and not too technical. The subjects have been brought up-to-date. American literature is well represented. The black and white illustrations are excellent. Many of them show the application of new techniques. The full-page illustrations in color are well done and most instructive. This monograph should be invaluable to advanced students of hematology and especially to investigators.

Tuberculosis in Childhood and Adolescence with Special Reference to the Pulmonary Forms of the Disease. By F. J. Bentley, M.D., F.R.C.P., D.P.H., S. Grzybowski, M.D., M.R.C.P., and B. Benjamin, B.Sc., F.I.A. Preface by Sir Robert A. Young, C.B.E., M.D., F.R.C.P. Foreword by Wilfrid Sheldon, C.V.O., M.D., F.R.C.P., Physician Pædiatrician to H.M. The Queen. Cloth. $5; 30s. Pp. 259, with 67 radiographs. National Association for Prevention of Tuberculosis, Tavistock House North, Tavistock Sq., London, W.C.1, 1954.

The challenge of tuberculosis is as strong today as at any time; although the infection is known to be preventable, its toll of lives throughout the world still runs high. Detection of the disease in a young child, even an infant, must lead to the expert scrutiny of the adults with whom the child has been in contact and may lead to the discovery of unsuspected but infected adults in need of treatment and segregation. A sound knowledge of the clinical aspects of the disease in persons of different ages emphasizes the value of this text. The work is based on experience with over 1,000 children treated in the sanatorium and followed up for an average of six years. A special investigation into the clinical and pathological details surrounding the deaths from tuberculosis in 100 unselected cases in London children is included. The study provides an outline of the natural history of tuberculosis. The influence of measles and whooping cough on tuberculosis, the significance of lobar and segmental lesions, the importance of reinfection, and many other vital factors are discussed. Some new aspects of the connection between primary disease in children and pulmonary tuberculosis in adults are brought to light. The extent to which death in childhood may be preventable is analyzed. The inadequacy of present methods of dealing with the disease in children calls for an overhaul of both clinical and administrative arrangements. The fundamental pattern of tuberculosis shows striking similarities, although its tempo may vary from country to country. A plea is made for the organization of special clinics for tuberculous children. This volume is pleasant reading, stimulating, and informative.

Menorrhalgia—Menstrual Distress. By William Bickers, M.D., Attending Gynecologist to Retreat for Sick, Richmond, Virginia. Publication number 208, American Lecture Series, monograph in American Lectures in Gynecology and Obstetrics. Edited by E. C. Hamblen, B.S., M.D., F.A.C.S., Professor of Endocrinology, Duke University School of Medicine, Durham, N. C. Cloth. $2.75. Pp. 97. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, 1954.

The author of this small monograph has been interested in menstrual distress for many years. He has prepared a very readable monograph, which contains the following chapters: Introduction to Menorrhalgia, Physiologic and Morphologic Background, Menstrual Distress—Why?, Hormonal Interceptors and Excitors, Pharmaco-Physio Dynamics, Surgical Interceptors, Clinical Evaluation, and the Menorrhalgic Patient and Her Treatment. Each chapter is supplemented by a list of references. Bickers discusses the various forms of treatment, with special emphasis on his own. The book contains an excellent exposition of its subject.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

QUERIES AND MINOR NOTES

USE OF ESTROGENS IN AGED WOMEN

TO THE EDITOR:—*The query, "Testosterone for Older Men," in* THE JOURNAL, *Dec. 26, 1953, page 1598, led me to use 10 mg. of testosterone daily. The well-being effect produced is definite. For older women of comparative age and well past menopause, what is of similar benefit? If estrogenic products are beneficial, please evaluate the synthetic and natural types and give dosage recommendations.*

M.D., California.

ANSWER.—It is claimed that androgens have an appreciable effect on the well-being of postmenopausal women, especially when administered together with estrogens. There are a number of such oral preparations on the market, often in the classification of geriatric therapy, that contain well-established ratios of estrogen and androgen. This ratio is usually 10 to 1 or 20 to 1 androgen to estrogen by weight. Thus, the androgen component will vary between 5 and 10 mg., while the estrogen will vary between 0.25 to 0.5 mg. It is possible that the dosage form containing 10 mg. of testosterone may be excessive as regard the possibility of producing slight signs of virilism after long-continued usage. It is quite possible that a synthetic estrogen in similar doses, such as diethylstilbestrol, 0.25 to 0.5 mg. daily, may be as effective as the natural estrogen. However, there seems to be a higher incidence of uterine bleeding after prolonged administration of this synthetic estrogen.

CRICOTHYREOTOMY

TO THE EDITOR:—*The library facilities at this Army installation are limited. I am interested in cricothyreotomy, which may be used in place of emergency tracheotomy.*

Ralph J. Caparosa, M.D., New York.

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—Cricothyreotomy is an operation not justifiable except in the direst emergencies. If the unskilled and inexperienced surgeon is obliged to divide the cricoid and thyroid cartilages to open the airway in a case of high respiratory obstruction, certainly a cannula should not be worn in the incision. A proper tracheotomy with the tracheal incision at least one ring below the cricoid should be performed immediately after the relief of dyspnea for the placement of the cannula. Otherwise, permanent damage to the larynx and intractable laryngeal stenosis or atresia is the inevitable result. Even laryngotomy, which ordinarily means division of the cricothyroid membrane, between the cricoid and thyroid cartilages, is not justifiable except as a temporary emergency measure, and a cannula should not be worn through such an incision.

ANSWER.—Cricothyreotomy is another term used for a high tracheotomy. The trachea can be entered more quickly through the cricothyroid membrane between the thyroid and cricoid cartilage and this procedure is justifiable in an extreme emergency when there is obstruction to the airway in the larynx or above; however, the procedure should be followed immediately by an orderly tracheotomy, within 12 to 24 hours, so that the tracheal cannula is introduced into the trachea at a much lower level, i. e., below the first tracheal ring. The reason for this is that if a metal cannula is allowed to remain in place, via the cricothyroid membrane, a stenosis of the larynx will result from pressure on the cricoid cartilage by the cannula. A description of the procedure and its indications can be found in any standard textbook on laryngology.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

PREPARATION OF THE OPERATIVE SITE

TO THE EDITOR:—*What are the ideal agents for preoperative preparations of the surgical area? We have been using alcohol and aqueous benzalkonium (Zephiran) chloride. Are there any plastic drapes available that can be autoclaved and used beneath the operative drapes?*

D. R. Lehrer, M.D., Sandusky, Ohio.

ANSWER.—There are many agents for preparation of the skin of the operative site and any one of them is satisfactory if used properly. The area should always be cleaned well with soap and water the night before operation. If a chlorinated hydrocarbon is to be used, a soap containing this agent should be employed. In the operating room any one of the mercurial antiseptics, such as thimerosal (Merthiolate), is a satisfactory preparation if the skin has first been cleaned with alcohol and ether. If a chlorinated hydrocarbon, such as hexachlorophene, is used, it is important that no other agent that might interfere with the protective film that is left by the chlorinated hydrocarbon be used after its application. If a quaternary ammonium compound such as benzalkonium chloride or benzethonium (Phemerol) chloride is used, it must be remembered that these agents are inactivated by soap. Resorcinol compounds might be used, but these are not as good as the foregoing three groups of agents. If hexachlorophene is used, it is well to wet wash the operative site with this agent for about five minutes; then the area should be painted with this agent and the excess dried with a sterile towel. Plastic drapes manufactured by the Minnesota Mining and Manufacturing Company, Minneapolis, are available for surgical use. These are prepared in packages and are already sterilized. They come in various sizes and for specialized purposes. These cannot be resterilized. If these are to be used, consideration must be given to the fact that they are generators of static unless made conductive. They are marketed under the trade name of Scotch drapes.

PERMANENT WAVES

TO THE EDITOR:—*Is there any detrimental effect on the scalp or hair of children after the use of "chemical hair waves" over a long period of time?*

M.D., Indiana.

ANSWER.—Permanent waving solutions for children are basically the same as those intended for adults. These are usually cold waves with a salt of thioglycolic acid as the essential ingredient. Waving of the hair is made possible by chemical changes brought about by the thioglycolate solution. The hair is rendered more plastic and flexible and, during this relaxed state, tension is applied in whatever direction is desired. In this case, it is wound around curlers and wavy hair results. The greatest care must be exercised to avoid too much tension because hair breaks easily at this point in the waving process. To make the wave "permanent" the thioglycolate solution must be neutralized. A bromate or perborate neutralizer may be used for this purpose, or the product may be of the "automatic or non-neutralizer" type that does not require a chemical preparation. It then depends on neutralization by oxidation, which requires several hours.

At one time it was thought that thioglycolates might be absorbed through the skin to cause systemic reactions. But scientifically acceptable studies over more than a 10 year period and widespread use for an equal length of time give no evidence that skin absorption and systemic reactions occur following the sporadic or prolonged use of these cold waving preparations. The studies do show that an occasional skin sensitization or irritation may result. Particularly susceptible are beauticians who handle cold waving preparations as well as potential irritants and sensitizers daily. As far as known, these toxicity studies include adults only as test subjects. No studies are known that compare the child's skin with adult skin in such aspects as

permeability and resistance to irritants and sensitizers. Some dermatologists have stated, however, that in general the horny or surface layer of the skin is thinner in the child than in the adult. One would therefore expect that, when a thioglycolate solution comes in contact with the horny layer of a child's skin, it might be more damaging than when it contacts an adult skin. This supports the manufacturer's usual precautions that contact between the skin and the waving lotion be kept to a minimum. General precautions in the cold waving permanent procedure that apply to adults are imperative in giving a child a home permanent: 1. Keep waving lotion away from eyes, ears, nose, and mouth and from the skin as much as possible. 2. Keep waving lotion and neutralizing solution out of reach during the process and discard them immediately after use. Accidental ingestion of these solutions may cause serious results. 3. Do not give a cold wave if there are abrasions or scratches on the scalp.

The other problem is that of the cosmetic appearance of hair. Children's hair is regarded as finer and less resilient than that of an adult. At best, it is difficult to curl. If, however, the decision is to proceed with a home permanent, products intended for children are preferable. In general, makers of home permanents for children seem to be conscientiously taking into consideration the special problems of waving children's hair. They have attempted to incorporate modifications both in formulas and in directions for use to promote safer and more successful hair waving for children. If a professional wave is to be given, a beautician should be selected who is skilled and experienced in the problems associated with waving children's hair.

PREMATURE EJACULATION

To the Editor:—*Please explain the cause and treatment of premature ejaculation.* *M.D., Kentucky.*

Answer.—Premature ejaculation or ejaculatio praecox is caused by two classes of conditions, one organic and the other functional. In the organic category may be classed infections of the genitourinary tract, irritative phenomena involving the spinal cord, or the neural plexi controlling the genitourinary mechanisms, and hyperesthesia of the penile skin, especially at the point of the mucosal junction at the meatus. The principal mechanism that sets off the phenomenon of ejaculatio praecox is hyperemia of the verumontanum. This is sometimes associated with an erosion in that area.

The nonorganic causative agents may be divided into two categories. In the first category may be placed cases of sexual excesses as well as those involving improper sexual technique, due to inexperience, habitual precipitation, thoughtlessness, or indifference. The largest subdivision of the functional group, however, is composed of mental states, such as anxiety, manic phases, guilt complexes and other psychiatric involvements.

Treatment of the organic situations consists of removal of the cause, where possible. Active infection is treated by a suitably chosen antibiotic. It is frequently helpful to treat conditions of the verumontanum directly through an endoscope with a topical application of a solution of silver nitrate; this procedure may have to be repeated a number of times before results are obtained. The neural structures involved in certain cases will have to be treated either by medical or surgical means, depending on the history and examination findings in each specific case. In the instance in which hyperesthesia is a causative agent, a topical application of a weak anesthetic solution, such as procaine hydrochloride, 2 to 5%, should be applied to the parts involved a few minutes before coitus. Those patients in whom sexual technique is at fault should be reeducated along proper lines. The anxiety states and the guilt complexes or other psychoneurotic involvements must be treated in accordance with psychiatric principles.

The percentage of cures or even improvements is not spectacular. The reason for this is manyfold, principally due to a failure on the part of the patient, and even sometimes on the part of the physician, to realize the deep-seated root of these conditions. That is especially true of the nonorganic group. The only hope for success lies in persistence, a willingness to continue to try in the face of apparent failure, and an ability to control the patient sufficiently so that he will return as often as need be and so that treatment may not lapse or be discontinued. While the physician should not make any plenary promises or sanguine statements to the patient or his family, it is necessary above all that he does not permit either the patient or himself to become discouraged.

LACERATION OF THE CEREBELLUM

To the Editor:—*How often do you find a contrecoup laceration of the cerebellum, that is, a blow to the right anterior frontal region producing a laceration of the cerebellum? Does aneurysm of the cerebellum with spontaneous rupture occur frequently?* *E. J. Kielar, M.D., Nanticoke, Pa.*

Answer.—The occurrence of a contrecoup laceration of the cerebellum due to an impact against the anterior portion of the skull is exceedingly rare (Courville: Pathology of the Central Nervous System, Mountainview, Calif., Pacific Press Publishing Association, 1950, p. 297). However, an impact to the posterior pole of the skull may result in direct injury of the cerebellum with contrecoup injury of the anterior portion of the cerebrum. Another possibility that should always be considered in the presence of bipolar intracranial injuries is that there were two impacts, one frontal and the other occipital. The absence of damage to the scalp or skull at either or both sites does not preclude the possibility that two impacts were sustained, one anterior and the other posterior, and each of sufficient force to injure the underlying brain tissue. Although aneurysms may form on the cerebellar arteries, their presence in this situation is extremely uncommon. McDonald and Korb (*Arch. Neurol. & Psychiat.* **42:**298 [Aug.] 1939) in surveying the literature covering 1,023 cases of intracranial aneurysms found 2 involving the superior cerebellar arteries, 5 involving the anterior inferior cerebellar arteries, and 8 involving the posterior inferior cerebellar arteries. In 786 cases of ruptured intracranial aneurysm the cerebellar arteries were the site of rupture in 12 instances.

AN EMERGENCY KIT

To the Editor:—*In retirement, I associate with an age group of persons who might have a heart attack. What do you recommend for a physician to carry for emergency use, in coronary cases, such as shock? Would pearls of amyl nitrite still be useful, or is there something better today? If a hypodermic syringe is among the recommendations, what drugs are best to use?* *C. L. Beaven, M.D., El Paso, Texas.*

Answer.—The most important item in a kit intended for extreme emergencies would be morphine. This can be carried in syrettes or other containers for immediate use. Amyl nitrite pearls and glyceryl trinitrate (nitroglycerine) tablets are excellent for rapid coronary vasodilatation. Other drugs that may be lifesaving include epinephrine for severe allergic manifestations, sodium amytal for disturbed patients and convulsive seizures, and ouabain or lanatoside C (Cedilanid) and aminophylline for acute heart failure and pulmonary edema. A tracheal airway, tourniquets, and pressure dressings should be included. One 10 cc. sterile syringe with a no. 20 needle would be adequate for all the above medications.

TESTING STERILITY OF LIQUIDS AND SOLIDS

To the Editor:—*We are interested in setting up a standard protocol at this hospital for the bacteriological determination of the sterility of instruments, solutions, drapes, gloves, etc., before, during, and at the end of surgery. We have not found such a standardized approved procedure in the literature.*
James S. Conant, M.D., Glenn Dale, Md.

Answer.—The accepted technique for testing sterility of liquids and solids is that published in the Pharmacopeia of the United States (vol. 14, 1950, pp. 758-762). This describes methods for sampling solids that are strictly applicable to all operating room situations. Some illustrative modifications are

helpful. Instruments and gloves are immersed in a jar of fluid medium to encourage growth of organisms in blood encrusted in recesses or buried in grease, oil, fat, or silicone. Drapes are best tested by stitching small swatches to them. These can be removed for culturing. Sterilizing processes are validated by planting specimens contaminated with dry heat resistant spores. These are obtained by heat treatment and desiccation of garden soil (Ecker: *Mod. Hosp.* **48:86**, 1937) or purchased from commercial sources (Vera: *Applied Microbiology* **1:117**, 1953). Bacillus stearothermophilus (NCA no. 1518) can be secured from the National Canners Association. Either qualitative or quantitative methods may be used depending upon the import of the investigation. Sterility testing, however, is not practicable for control of hospital practice. The 14 day incubation period essential for identification of negative cultures is too long. There are too many pitfalls in proper cleansing of instruments, packaging of textiles, and loading of sterilizers to permit valid deductions to be made on the basis of an occasional culture. The control of sterilization for routine use in a hospital depends on establishing a standard technique for packaging and wrapping supplies and loading sterilizers that permits steam to penetrate, heat, and moisten the load in a predetermined period. The quality of the steam as a microbicide is measured by reading a thermometer located in the lowest point of the sterilizer, the air and condensate drain line. Exposure to steam at 121 C (249.8 F) for a period sufficient to heat the load throughout plus the thermal death time of 13 minutes is adequate. Surgical supplies packaged as described in "Aseptic Treatment of Wounds" by Walter (New York, the Macmillan Company, 1948, pp. 74-91) are sterilized by 30 minutes' exposure to saturated steam at 121 C. Automatic controls are available to impound each load during sterilization. Such devices do not supplant the sound management of the supply room and alert supervision of the operating room on which safe aseptic technique depend.

EPIDIDYMITIS

To the Editor:—*In* The Journal, *April 3, 1954, page 1236, a letter requests information on the cause of acute nonspecific epididymitis and the reply places the blame on trauma or strain. Such is merely an unproved hypothesis, and, if accepted as a fact, it opens up a wide field of litigation in both the industrial and the malpractice areas. In the late 19th century the universal cause of practically all illness was miasma and trauma. In Pepper's "System of Practical Medicine by American Authors" (vol. 5, Philadelphia, Lea Brothers and Company, 1886, p. 1151) the cause of anterior poliomyelitis was said to be trauma or strain. Whenever the complaint of a workman is said to be due to or aggravated by trauma, it immediately passes out of the field of the private practice of medicine and into the office of a contract insurance physician. A thorough review of the literature along with seven case reports of so-called traumatic epididymitis, published in* The Journal (**91:***1857-1860 [Dec. 15] 1928*), *lists the four postulates set up by the Workmen's Compensation Board of Germany that had to be met before trauma was accepted as the cause of epididymitis. The teaching of Terrilon, published in 1885, that trauma by effort is a symptom complex due to recurrent slight infection, has been accepted by all, up to the recent epidemic of financial diagnoses.*

At present in California an appellate court is considering a case involving five figures, based on the allegation that a man slipped on a wet floor and, as a result, tubercle bacilli were squirted into his epididymis. It is a fact accepted by all scientists that the passage of bacteria from an infected prostate or bladder through the sphincter of a normal ejaculatory duct is not possible. A hypertrophied prostate with marked back pressure over a long period of time may infect and dilate the ejaculatory duct and vas deferens to large size, and frequent straining can eventually force urine down the dilated toneless ejaculatory duct and vas. Low and Oppenheim's hypothesis of reverse peristalsis of the vas has never been demonstrated. Rolnick (Surg., Gynec. & Obst. **41:***15-20, 1925*) *attempted to prove that prostatic and seminal vesicular secretions could extend downward through the lumen of the vas. He could not force fluid beyond the tail of the epididymis with syringe pressure through the isolated vas in a series of animals. Graves and Engle in 1950* (J. Urol. **64:***601-613, 1950*) *repeated some of Rolnick's experiments but summed up their results as not conclusive. C. W. Cathcart* (Edinburgh M. J. **26:***152-168, 1921*) *took one of his cases to court, and the judge ruled there was no scientific evidence that strain played any part in the causation of epididymitis. The literature contains some interesting articles pro and con, consisting of personal opinions that are no more scientific than a testimonial for Lydia Pinkham's Vegetable Compound.*

In the case now before an appellate court in California, a urologist stated that "slipping and muscle tensing in the perineum forces the infected material down the vas to the epididymis; that jolting, falling on the perineum, bladder irrigations under high pressure may cause the above spread of infection; a full bladder at the time of injury is apparently a factor which may on occasion force infected material down the vas to the epididymis."

Dr. Hugh H. Young stretched a contracted bladder by means of hydraulic distention (elevating the bag 20 ft. on a pole out of a window) and as a direct result became professor of urology at Johns Hopkins University. In his nearly 50 years of tenure he routinely taught that the proper way to treat chronic prostatitis was by massage, bladder irrigations, etc., and his scores of disciples are still following his teachings. If this hypothesis of trauma by effort, or, more succinctly, "epididymitis by grunt," is accepted as a scientific fact, and epididymitis develops during treatment in one of Dr. Young's disciples' patients with prostatitis the physician is, if the answer The Journal *published is allowed to stand, wide open for a malpractice judgment.*

The question and answer as published has already been picked up by attorneys of the plaintiffs in this area. It will be only a question of a short time until a defendant's witness is going to be asked if he accepts the teachings of the American Medical Association as authoritative, and he is going to be stymied unless he can refer to a correct answer that counterbalances the other.

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Dr. Wesson's letter was referred to the consultant who answered the query, and he commented as follows:

The answer to the query regarding epididymitis states definitely "the etiological factors involved in epididymitis have not been exactly determined." The various theories for the cause of nonspecific epididymitis, which is frequently observed subsequent to a strain or injury, include not alone reflux of bacteria into the epididymis via the vas deferens but also the infection carried to the epididymis via the blood stream or the lymphatic system. It definitely states that an incidental infection must be present in the urine subsequent to such lesions as chronic prostatitis or other diseases in the urinary tract. It is generally accepted that vigorous massage with chronic prostatitis is not infrequently complicated by epididymitis. It is difficult to see how a legal decision can be made on the basis of observations made in the answer to the query as stated in The Journal.

BLOODSHOT EYES

To the Editor:—*Regarding the query on bloodshot eyes in* The Journal, *April 24, page 1475, one thing should be added to the almost complete list of possible explanations, namely, malnutrition. After the exclusion of malignant disease, blood dyscrasia, and debilitating chronic disease, the question arises whether this patient with chronic photophobia and foreign-body sensation, without objective findings, has been on a well-balanced diet. Often correction of nutritional faults, omission of alcohol, and additional high vitamin intake, with particular attention to the vitamin B group, may bring relief in such a case.*

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